RADview-EMS

Element Management System

RIC-LC

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Contents

Chapter 1. Introduction

1.1 RIC-LC Overview 1-1
1.2 RADview-EMS RIC-LC Overview 1-1
Overview of the RADview FCAPS Model 1-2
RIC-LC Management Tasks 1-2

Chapter 2. Installation and Operation

2.1 Network Management Options 2-1
2.2 Pre-Configuring RIC-LC for Network Management 2-2
Connecting a Terminal to the Control Port 2-2
Configuring Host Parameters 2-2
Configuring Management Access 2-3
Adding a Network Management Station (NMS) 2-3
Configuring the SNMP Communities 2-4
2.3 Connecting RIC-LC to Network Management Stations 2-5
2.4 Launching RADview-EMS RIC-LC 2-5
2.5 Using the Graphical User Interface (GUI) 2-7
RIC-LC Shelf View Window 2-7
Title Bar 2-7
Menu Bar 2-7
Toolbar 2-8
Status Bar 2-8
RADview RIC-LC Menu Maps 2-9
Selecting the Device 2-10
Selecting Ports 2-11
RIC-LC Connectors 2-11
RIC-LC LED Indicators 2-12

Chapter 3. Configuration Management

3.1 Services 3-1
Ethernet Management Traffic 3-2
Ethernet Traffic Services 3-3
3.2 Setting the System Parameters 3-4
Configuring System Logistics Information 3-4
Configuring the Host IP Parameters 3-5
Defining Network Managers 3-6
3.3 Setting the Operational Parameters 3-8
Configuring the System Clocks 3-8
Configuring Interfaces at the Physical Level 3-9
Configuring the E1 Interface 3-9
Configuring the Ethernet Interface 3-11
Configuring the Logical Port 3-12
Configuring the Bridge 3-15
Configuring VLAN Membership (Egress) 3-17
Configuring the Static MAC Table 3-18
Configuring the Bridge Ports 3-20
Configuring the QoS 3-22
Configuring the Traffic Priority 3-22

Configuring the Rate Limitation 3-25
Configuring Fault Propagation 3-26
3.4 Additional Tasks 3-27
Displaying the System Information 3-28
Displaying the Logical Port Information 3-28
Displaying the SFP Information 3-30
Setting the Date and Time 3-32
Resetting to the Defaults 3-34
Resetting RIC-LC 3-35

Chapter 4. Performance Management

4.1 Introduction 4-1
4.2 Controlling Polling for Statistics Data 4-1
4.3 Displaying GFP Statistics 4-2
4.4 Displaying E1 Statistics 4-3
Displaying Current E1 Interface Statistics 4-3
Displaying Interval E1 Interface Statistics 4-5
4.5 Displaying Ethernet Interface Statistics 4-6

Chapter 5. Security Management

5.1 RADview-EMS User Security Levels 5-1
Monitor 5-1
Technician 5-1
Operator and Administrator Levels 5-1
5.2 Adding Users 5-2
5.3 Changing User Names 5-2
5.4 Changing Passwords 5-3
5.5 Removing Users 5-4
5.6 Viewing and Setting Access Options 5-4

Chapter 6. Fault Management

6.1 Handling Alarms and Traps 6-1
Viewing Device Status 6-1
Displaying Active Alarms 6-2
Viewing all Active Alarms 6-2
Viewing all System Alarms 6-3
Viewing Port Alarms 6-4
Displaying History Log 6-5
Clearing History Log 6-6
Masking Alarms 6-7
6.2 Running Diagnostic Tests 6-8
Running Loopbacks 6-8
Running E1 BERT 6-9
Running Virtual Cable Test 6-10

Chapter 7. Application Tutorial

7.1 Overview 7-1
Application 7-1
Connecting RIC-LC Units to Network Management Stations 7-1
Configuration Sequence 7-2
7.2 Launching the RIC-LC Shelf View Window 7-2

7.3 Configuring the RIC-LC (A) Unit 7-3
Configuring E1 Interface at the Physical Level 7-3
Configuring the System Clock 7-3
Configuring the Logical Layer 7-4
7.4 Configuring RIC-LC (B) 7-6
Configuring the Physical Layer 7-6
Configuring the System Clock 7-6
Configuring the Logical Layer 7-7

Chapter 1

Introduction

This chapter provides an overview for managing RIC-LC using the RADview-EMS management solution. It introduces the graphical user interface. It is assumed that you are familiar with basic RADview-EMS operations. For more information about basic RADview-EMS operations, refer to the RADview EMS (PC) or (Unix) User's Manual.

1.1 RIC-LC Overview

RIC-LC is a Fast Ethernet over E1 converter that provides simple, efficient, and cost-effective Fast Ethernet connectivity over one, four, eight or sixteen bonded E1 circuits. The device enables service providers to supply high-capacity Ethernet services to remote locations and to transparently connect corporate LANs over existing E1 links.

RIC-LC supports standard Ethernet over NG-PDH protocols, including GFP ITU-T G.8040, VCAT ITU-T G.7043 and LCAS ITU-T G.7042. These protocols allow service providers to dynamically allocate bandwidth to their customers by merely changing the number of links bonded to the virtual group, without stopping the service.

Management is performed locally by a terminal, or remotely via Telnet, Web terminal or SNMP.

RIC-LC is supported by two platforms:

- PC: Standalone and Oracle DB
- Unix: Standalone and Oracle DB.

Note

- *RADview-EMS/WIN can be installed under Windows 7 (64bit) Professional Edition, and Windows 2008 Server R2 (64 bit) Standard Edition operating systems.*
  Windows 7 (32-bit) is not recommended as usable RAM memory is limited to 4 GB.
- *RADview-EMS/Unix can be installed under SPARC Solaris 10 operating system.*

1.2 RADview-EMS RIC-LC Overview

This section explains the steps required to get the RADview EMS management system for RIC-LC up and running. It describes the graphical user interface, configurations, security and fault management. Specific tasks possible with RIC-LC are dealt with in the subsequent chapters in this manual. All the configurations

and management support tasks described in this manual can be performed with RADview.

The RADview-EMS management system for RIC-LC provides all the tools necessary for monitoring device performance and configuring the parameters for local and remote devices.

The RADview-EMS management system for RIC-LC is accessed at two levels:

- Device Level
- Port Level:
  - Network and user Ethernet ports
  - E1 ports

Overview of the RADview FCAPS Model

RADview provides a complete management solution for monitoring and controlling the RIC-LC device. The RADview solutions conform to ITU-T Telecommunication Management Network (TMN) recommendations for SNMP management systems, known as the FCAPS model:

- **Fault management** – detects and correlates faults in network devices, isolates faults, and initiates recovery actions.
- **Configuration management** – tracks configuration changes, and configures, installs, and distributes software and configuration files across the network.
- **Accounting management** – collects accounting data and generates network usage reports.
- **Performance management** – continuously monitors network performance (QoS, CoS) and resource allocation.
- **Security management** – controls and restricts access to network resources.

RIC-LC Management Tasks

Table 1-1 lists the management tasks that are available when you select the entire system.

Table 1-1. Mapping of FCAPS Functions to RIC-LC Menu Paths and Manual Sections

FCAPS Component	Function	Device Level		Port Level	
		Menu Path	Section in this Manual	Menu Path	Section in this Manual
Fault Management	Viewing the active alarms	Fault › Alarms › All	*Viewing all Active Alarms* (Chapter 6)		
	Viewing the system alarms	Fault › Alarms › System Level	*Viewing all System Alarms* (Chapter 6)		

FCAPS Component	Function	Device Level		Port Level	
		Menu Path	Section in this Manual	Menu Path	Section in this Manual
	Viewing the port alarms			Fault › Alarms › Alarms	*Viewing Port Alarms* (Chapter 6)
	Viewing the history log	Fault › History Log › List	*Displaying History Log* (Chapter 6)		
	Clearing the history log	Fault › History Log › Clear	*Clearing History Log* (Chapter 6)		
	Masking the alarms	Fault › Alarm Mask	*Masking Alarms* (Chapter 6)		
	Running E1 loopbacks			Diagnostics › Remote Loop	*Running Loopbacks* (Chapter 6)
	Running E1 BERT			Diagnostics › BERT	*Running E1 BERT* (Chapter 6)
	Running virtual cable test			Diagnostics › Virtual Cable Test	*Running Virtual Cable Test* (Chapter 6)
Configuration Management	Defining management host IP	Options › Host	*Configuring the Host IP Parameters* (Chapter 3)		
	Defining network managers	Options › Manager List	*Defining Network Managers* (Chapter 3)		
	Configuring system clocks	Configuration › System Clocks	*Configuring the System Clocks* (Chapter 3)		
	Configuring E1 interface			Configuration › Port Parameters	*Configuring the E1 Interface* (Chapter 3)

FCAPS Component	Function	Device Level		Port Level	
		Menu Path	Section in this Manual	Menu Path	Section in this Manual
	Configuring Ethernet interface			Configuration › Port Parameters	*Configuring the Ethernet Interface* (Chapter 3)
	Configuring the Logical Port	Configuration› Logical Port	*Configuring the Logical Port* (Chapter 3)		
	Configuring the bridge	Configuration › Bridge › Parameters	*Configuring the Bridge* (Chapter 3)		
	Configuring the static MAC table	Configuration › Bridge › MAC Table	*Configuring the Static MAC Table* (Chapter 3)		
	Configuring the bridge ports	Configuration › Bridge › Bridge Port	*Configuring the Bridge Ports* (Chapter 3)		
	Configuring VLAN membership	Configuration › Bridge › VLAN Membership (Egress)	*Configuring VLAN Membership (Egress)* (Chapter 3)		
	Configuring Fault Propagation	Configuration› Fault Propagation	*Configuring Fault Propagation* (Cahpter 3)		
	Configuring traffic priority	Configuration › QoS › Mapping	*Mapping Priority to the Traffic Classes* (Chapter 3)	Configuration › Bridge Port	*Selecting a Traffic Classification Method* (Chapter 3)
	Configuring rate limitation	Configuration › QoS › Rate Limitation	*Configuring the Rate Limitation* (Chapter 3)		
	Displaying system information	Configuration › System Info	*Displaying the System Information* (Chapter 3)		

FCAPS Component	Function	Device Level		Port Level	
		Menu Path	Section in this Manual	Menu Path	Section in this Manual
	Displaying logical port information	Configuration > Logical Port	*Displaying the Logical Port Information* (Chapter 3)		
	Defining date and time	Configuration > Date & Time	*Setting the Date and Time* (Chapter 3)		
	Resetting to defaults	Configuration > System Commands > Reset Configuration	*Resetting to the Defaults* (Chapter 3)		
	Resetting unit	Configuration > System Commands > Reboot Agent	*Resetting RIC-LC* (Chapter 3)		
Performance Management	Initiating polling sequence	Configuration > System Commands > Poll Agent	*Controlling Polling for Statistics Data* (Chapter 4)		
	Setting Polling Intervals	Statistics > Polling Interval	*Controlling Polling for Statistics Data* (Chapter 4)		
	Displaying current E1 statistics			Statistics > Current	*Displaying Current E1 Interface Statistics* (Chapter 4)
	Displaying interval E1 statistics			Statistics > Intervals	*Displaying Interval E1 Interface Statistics* (Chapter 4)
	Displaying Ethernet statistics			Statistics > Interface Statistics	*Displaying Ethernet Interface Statistics* (Chapter 4)

FCAPS Component	Function	Device Level		Port Level	
		Menu Path	Section in this Manual	Menu Path	Section in this Manual
	Displaying GFP Statistics	Statistics› GFP	*Displaying GFP Statistics* (Chapter 4)		
Security Management	Adding users		*Adding Users* (Chapter 5)		
	Changing user names		*Changing User Names* (Chapter 5)		
	Changing passwords		*Changing Passwords* (Chapter 5)		
	Removing users		*Removing Users* (Chapter 5)		
	Defining access methods	Options › Access	*Viewing and Setting Access Options* (Chapter 5)		

Chapter 2

Installation and Operation

This chapter explains the installation and operation required to get the RADview-EMS system for RIC-LC up and running. It also describes the RADview-EMS RIC-LC graphic user interface (GUI) and how to select the system and its ports.

This chapter discusses the following:

- *Network Management Options*
- *Pre-Configuring RIC-LC for Network Management*
- *Connecting RIC-LC to Network Management Stations*
- *Launching RADview-EMS RIC-LC*
- *Using the Graphical User Interface (GUI)*

2.1 Network Management Options

RIC-LC has a local management subsystem that controls the operation of all of its circuits. The subsystem supports various management interfaces, including SNMP management (for example, RADview), Telnet, and local management via an ASCII terminal or a Web browser. RADview management software is typically used to support large networks.

Some parameters cannot be changed from within RADview. However, you can use the built-in management menu-driven interface of RIC-LC to configure them. The configuration menus are accessible from a serial connection to the device control port or by using the Telnet protocol via a connection to the Ethernet port. For complete information about managing RIC-LC using the terminal or Telnet, refer to the RIC-LC Installation and Operation Manual.

RADview network management software uses SNMP messages to manage RIC-LC via a network management station (NMS). RIC-LC is connected to the management station either on a local LAN or from a remote location, via a PSN connected to one of the unit's Ethernet ports.

2.2 Pre-Configuring RIC-LC for Network Management

RIC-LC can be managed by a network management station (NMS)located on the LAN that is connected to one of the unit's Ethernet ports.

To remotely administer RIC-LC from a network management station, it is necessary to first configure the basic RIC-LC parameters via an ASCII terminal connected to the RIC-LC control port. The following steps are required:

1. Connect a terminal to the control port.
2. Configure the host parameters.
3. Configure the management access.
4. Add a network manager.
5. Configure the SNMP communities.

Connecting a Terminal to the Control Port

To configure the basic IP parameters, you must connect an ASCII terminal to the RIC-LC control port and log in.

➤ **To configure the RIC-LC system parameters:**

1. Configure an ASCII terminal as follows:
   - One start bit
   - Eight data bits
   - No parity
   - One stop bit
   - No flow control
   - VT100 emulation.
2. Connect the terminal to the RIC-LC control port.
3. Press ‹**Enter**› several times, which allows RIC-LC to detect the data rate.
4. Initiate the control session by entering the administrator user name and password.

Configuring Host Parameters

You can manage RIC-LC via a network management station connected to one of the unit's ports. To establish a proper connection, you must configure the Host parameters, such as the Host IP address.

➤ **To define the Host parameters:**

1. From the Main menu, navigate to Configuration › System › Management › **Host**.

   The Host menu appears as shown in *Figure 2-1*.

```
                                    RIC-LC
System>Management>Host

 1. IP Address                                (192.168.99.198)
 2. IP Mask                                   (255.255.255.0)
 3. Default gateway                           (192.168.99.250)
 4. Host Tagging                              (Disable)

>

Please select item <1 to 4>

ESC - prev menu; ! - main menu; CTRL+X - exit                          <1 Mngr>
```

Figure 2-1. Host Menu

2. Select **IP Address** and enter the IP address of the IP host.
3. Select **IP Mask** and enter the host IP subnet mask.
4. Select **Default Gateway** and enter the default gateway IP address.
5. Select **Host Tagging** and choose **Disable**.
6. Select **S** to save.

Configuring Management Access

RIC-LC allows you to enable access to the management system via an SNMP application.

➤ **To configure the management access:**

- Display the Management Access menu (Configuration › System › Management › **Management Access**), and set the SNMP access to Enable.

```
                                    RIC-LC
System>Management>Management Access

 1. User Access                              >
 2. Session Timeout(sec)[180-1800]           (900)
 3. Telnet Access                            (Enable)
 4. Web Access                               (Enable)
 5. SNMP Access                              (Enable)

>

Please select item <1 to 5>

ESC - prev menu; ! - main menu; CTRL+X - exit                          <1 Mngr>
```

Figure 2-2. Management Access Menu

Adding a Network Management Station (NMS)

To remotely configure RIC-LC, the NMS needs to be listed in the Manager List. NMS configuration defines the IP address of a new network management station.

The maximum number of network management stations is 10.

Each NMS is automatically assigned an index number in the range of 1 to 10.

➤ **To add a network management station:**

1. From the Manager List menu (Configuration › System › Management › **Manager List**), type **F** to select the management station to be configured.
2. Select **Manager IP Address**, and enter the IP address of the management station.
3. Select **Manager Trap Mask**, and enter **Unmask**.

```
                                RIC-LC
System>Management>Manager List

Manager ID:1
 1. Manager IP Address                    (0.0.0.0)
 2. Manager Trap Mask                     (Unmask)

>

Please select item <1 to 2>
F - Forward
ESC - prev menu; ! - main menu; CTRL+X - exit                          <1 Mngr>
```

Figure 2-3. Manager List Menu

Configuring the SNMP Communities

RIC-LC allows you to specify the communities in which the RIC-LC management agent accepts SNMP command.

➤ **To define read, write and trap communities:**

1. From the Authentication/Community menu (Configuration › System › Management › **Authentication and Community**), select **SNMP Authentication Failure Trap** to enable or disable sending this trap in case of an unauthorized access attempt.
2. Select **SNMP Trap Community** to enter the name of a community to which RIC-LC sends traps (up to 16 alphanumeric characters, case-sensitive).
3. Select **SNMP Read Community** to enter the name of a community with read-only authorization (up to 16 alphanumeric characters, case-sensitive).
4. Select **SNMP Write Community** to enter the name of a community with write authorization (up to 16 alphanumeric characters, case-sensitive).

```
                                    RIC-LC
System>Management>Authentication and Community

 1. SNMP Authentication Failure Trap        (Disable)
 2. SNMP Trap Community                     (SNMP_trap)
 3. SNMP Read Community                     (public)
 4. SNMP Write Community                    (private)

>

Please select item <1 to 4>

ESC - prev menu; ! - main menu; CTRL+X - exit                          <1 Mngr>
```

Figure 2-4. Authentication/Community Menu

2.3 Connecting RIC-LC to Network Management Stations

RIC-LC can be managed by a network management station via one of the unit Ethernet ports. The connection can be made from either a local LAN, or a remote location via a PSN.

➤ To connect RIC-LC to the network management station:

- Connect an Ethernet port to a port of an Ethernet switch or hub serving the network on which the appropriate NMS is attached.

2.4 Launching RADview-EMS RIC-LC

Begin using RADview-EMS RIC-LC by launching the respective RIC-LC shelf view.

➤ To launch the RIC-LC shelf view:

- On the map, select and double-click the RIC-LC icon.

  The respective RIC-LC shelf view window opens. You can now configure and monitor the unit.

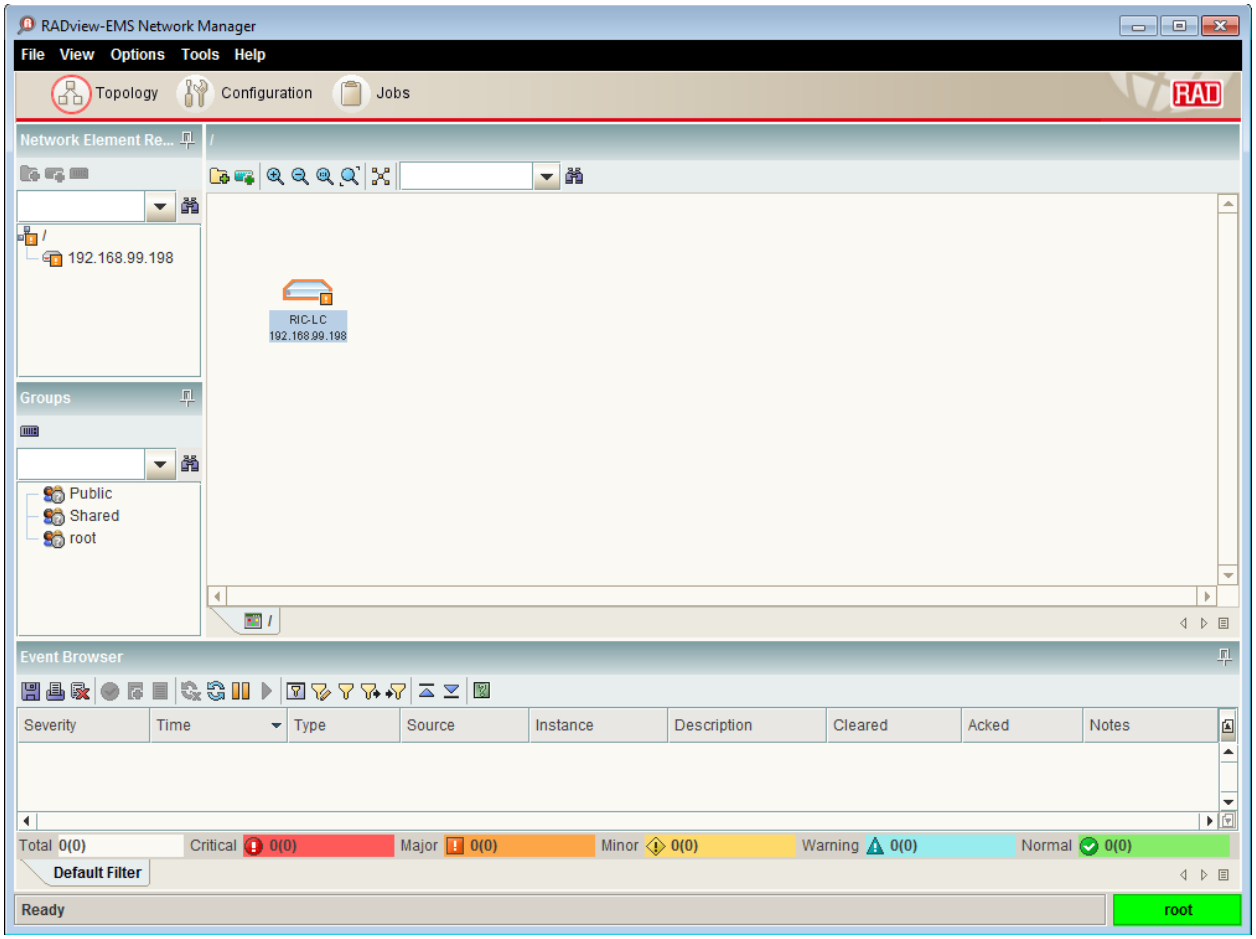


Figure 2-5. Management Console

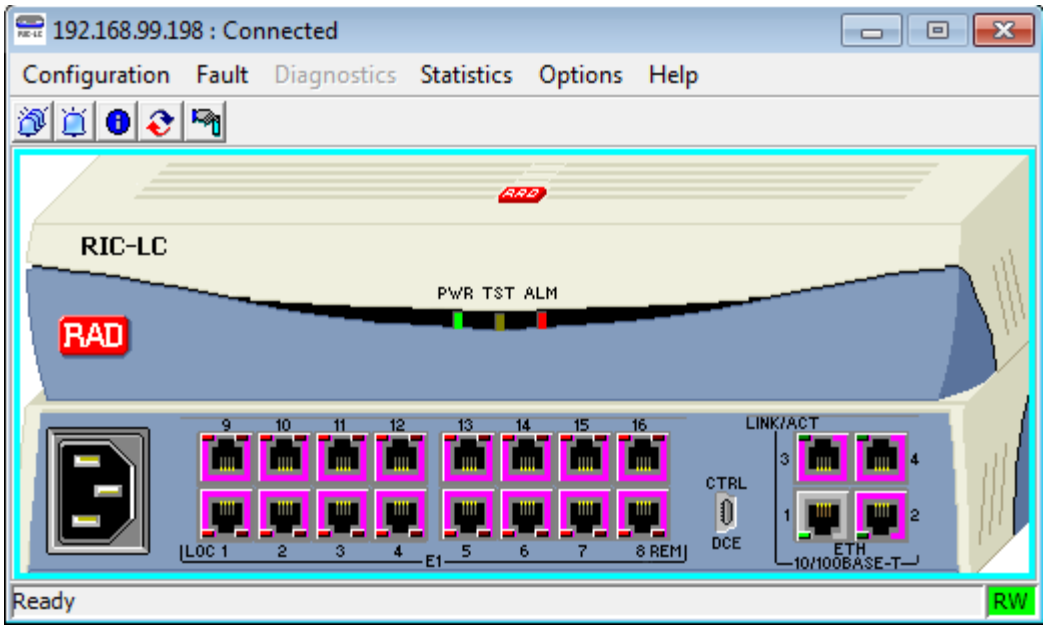


Figure 2-6. RIC-LC Shelf View Application

You can open the shelf view through the supporting platforms:

- To open the shelf view Zoom window, double-click the desired icon in the EMS Network Elements Tree, or right-click the item in the EMS Network Elements Tree and select Zoom on the object menu.
- On a PC (for EMS on standalone – EMS setup with Oracle DB) or a standalone – EMS setup with Oracle DB, you can either double-click the node in the Network Element Browser (provided that the network element default double-click action is set to Shelf View), or you can right-click the node, and on the menu that appears, select Shelf View.

2.5 Using the Graphical User Interface (GUI)

From the RIC-LC shelf view window, you can configure and monitor the unit at a system or a port level.

RIC-LC Shelf View Window

The RADview-EMS RIC-LC shelf view window displays a dynamic graphical representation of the RIC-LC front and back panels.

The view shows the front panel, which includes status LEDs for power, diagnostic tests and alarms, and the back panel, which includes AC/DC power connector, E1 and Ethernet ports.

The RIC-LC shelf view window contains the following elements:

- Title bar
- Main menu bar
- Toolbar
- RIC-LC device (front and back panel views)
- Status bar.

Title Bar

Figure 2-7. Title Bar

The title bar (at the top of the shelf view window) displays the name or IP address of the element given on the NMS and indicates whether the device is connected or disconnected.

Menu Bar

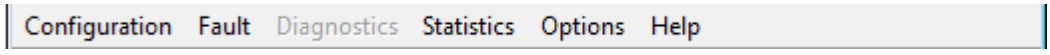


Figure 2-8. Main Menu Bar

The main menu has drop-down sub-menus. Click a menu to display all the items in that menu. The menu items allow you to perform operations related to the selected elements in the RIC-LC device. The menus are context sensitive; menu items are enabled or disabled as applicable to the selected element.

Operations related to specific elements can also be performed using shortcut menus activated by right-clicking the mouse on the selected element.

Toolbar

Figure 2-9. System Level Toolbar

A toolbar below the menu bar allows you to perform specific operations related to the selected elements with a single mouse-click. This toolbar is context sensitive; the icons displayed change according to the RIC-LC element currently selected.

Table 2-1. Toolbar Buttons

Icon	Name	Function
	System Info	Displays system info
	Poll Agent	Poll system
	Reset Configuration	Resets device configuration
	System Level Active Alarm List	Displays the system levels alarms
	All Active Alarm List	Displays all active alarms for the device

Status Bar

Figure 2-10. Status Bar

The status bar appears at the bottom of the shelf view window and indicates the current state of the system, as summarized in *Table 2-2*.

Table 2-2. Status Types and Descriptions

Status	Description
Working	Connection to the device is in progress
Waiting	Waiting for connection to the device
Interrupted	Connection to the device failed (time-out)
Ready	Connection to the device is successful
Polling	Device polling is in progress.

RADview RIC-LC Menu Maps

This section illustrates the RV-EMS RIC-LC menus (system and port levels).

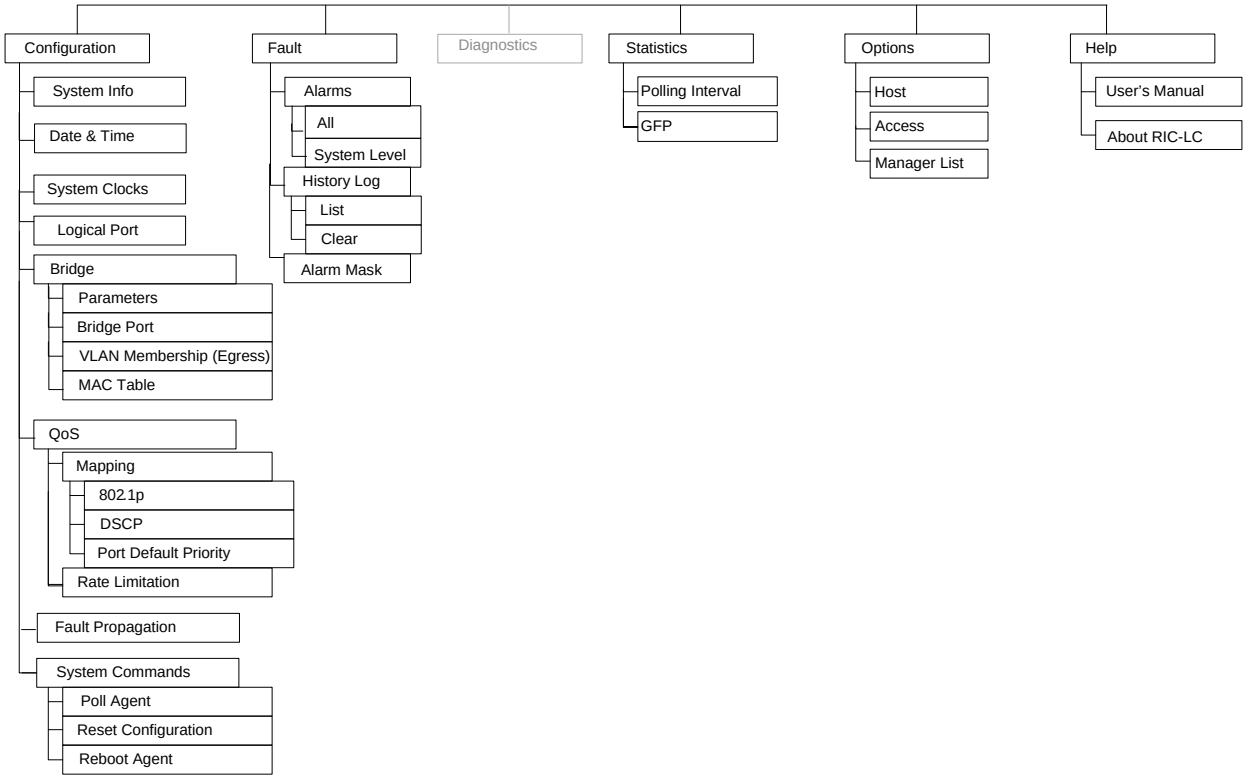


Figure 2-11. Device Level Menu Map

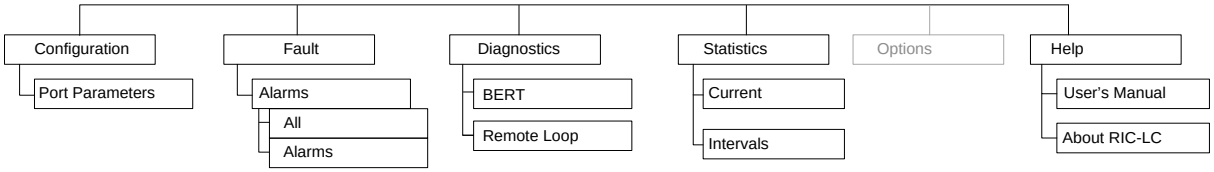


Figure 2-12. E1 Port Level Menu Map

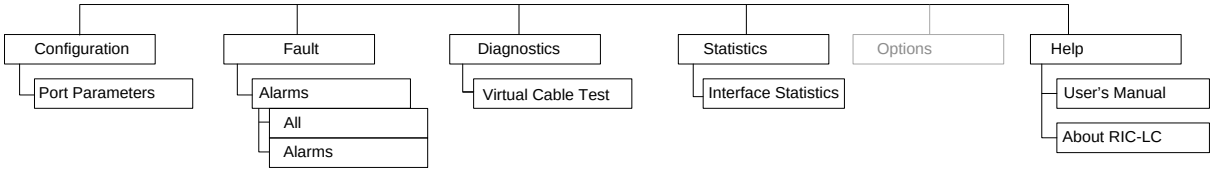


Figure 2-13. Ethernet Port Level Menu Map

Selecting the Device

Before you can perform system operations, you must first select the device in the RIC-LC shelf view window. The E1 and Ethernet ports are selectable. All areas that are not ports represent the system, and a border surrounds the panel. The default selection is the device.

➤ **To select the device:**

- Click inside the RIC-LC view window. Make sure none of the ports in the window has a border.

  A blue border surrounds the RIC-LC device, indicating that the whole system is selected. (The main view includes the front and back panels of the device.)

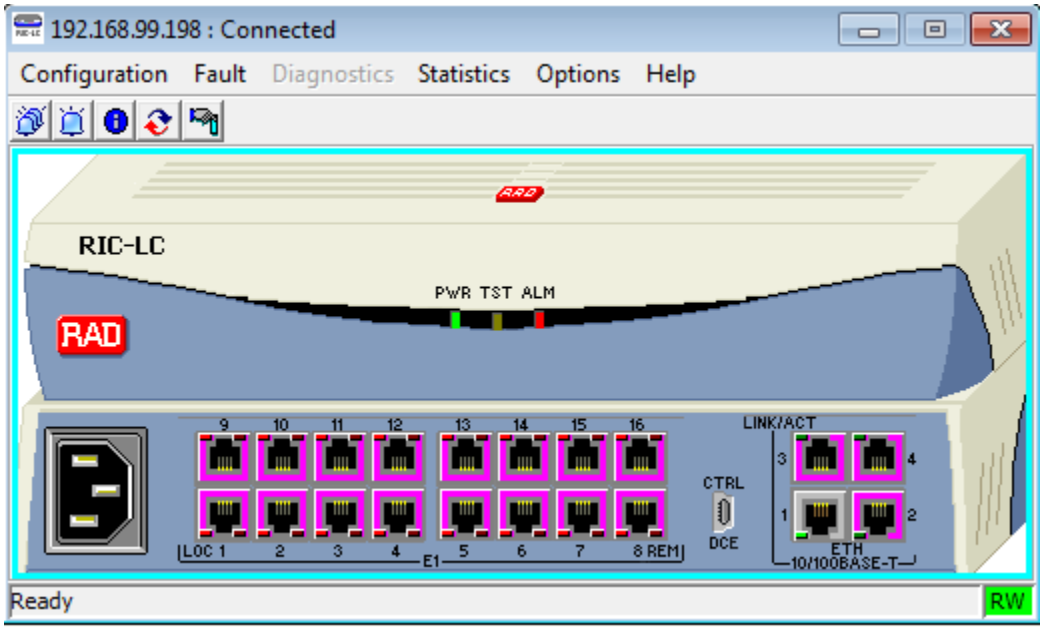


Figure 2-14. RIC-LC System Selected in the Shelf View Window

The RIC-LC shelf view opens with a specific node name. The NMS discovers the device by recognizing the device's designated IP address..

Selecting Ports

Before you can perform port operations, you must first select a port in the RIC-LC shelf view window.

➤ **To select a port:**

- In the RIC-LC shelf view window, click a port to select it.

  A blue border surrounds the port, indicating it is selected.

RIC-LC Connectors

Table 2-3 lists the RIC-LC ports.

Table 2-3. RIC-LC Connectors

Name	Number of Ports	Connector Type
Control	1	Mini-USB
E1	1, 4, 8, or 16	RJ-45 or BNC
Ethernet	4	4 RJ-45 or 2 RJ-45 and 2 SFP
Power Supply	1	AC or DC Voltage

Operational status for ports is indicated by a color within the port itself, based on polling and trap notifications of interfaces administrational/operational status. The port status is indicated by gray, magenta, or blue.

Table 2-4 lists and describes the port status colors.

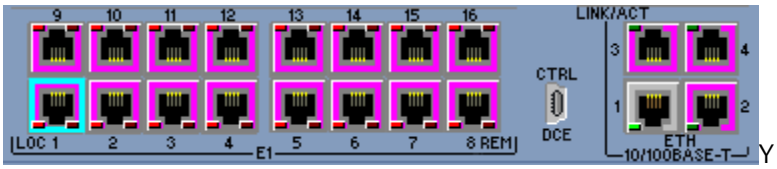


Figure 2-15. Port Status Indicators (Blue, Magenta, and Gray)

Table 2-4. Port Status Indicators

Port	Color	Description
E1	Magenta	Errors exist
	Blue	Active test on port
	Gray	No errors exist and no tests are running
Ethernet	Magenta	Errors exist
	Blue	Active test on port
	Gray	No errors exist and no tests are running

RIC-LC LED Indicators

This section lists the device LED indicators and their colors and status descriptions.

The RIC-LC shelf view window uses the standard RAD color codes to indicate operational and communication status of the agent, ports, and power supply.

Table 2-5. Front Panel LEDs

Name	Type	Function
PWR	Green LED	ON – RIC-LC is powered OFF – RIC-LC is off
TEST	Yellow LED	ON – Test is in progress OFF – No test in progress
ALM	Red LED	ON – Alarms are detected in the current alarm list OFF – No alarm currently detected

Table 2-6. Rear Panel LEDs

Name	Type	Function
E1 LOC	Red LED	ON – Synchronization loss is detected (LOS/LOF or AIS in Rx) OFF – The E1 link is synchronized
E1 REM	Red LED	ON – RDI is detected (remote alarm) OFF –No RDI is detected
ETH LINK	Green LED	ON – Ethernet link is OK OFF – The line is not active
ETH ACT	Yellow LED	ON – Data is being transmitted or received on the Ethernet link OFF – The line is no activity

Chapter 3

Configuration Management

This chapter discusses how to configure the RIC-LC system and operational parameters using RADview-EMS management system.

The following topics are covered in the chapter:

- *Services*
  - *Ethernet Management Traffic*
  - *Ethernet Traffic Services*
- *Setting the System Parameters*
  - *Configuring System Logistics Information*
  - *Configuring the Host IP Parameters*
  - *Defining Network Managers*
- *Setting the Operational Parameters*
  - *Configuring the System Clocks*
  - *Configuring Interfaces at the Physical Level*
  - *Configuring the Logical Port*
  - *Configuring the Bridge*
  - *Configuring the QoS*
  - *Configuring Fault Propagation*
- *Additional Tasks*
  - *Displaying the System Information*
  - *Displaying the Logical Port Information*
  - *Displaying the SFP Information*
  - *Setting the Date and Time*
  - *Resetting to the Defaults*
  - *Resetting*

3.1 Services

This section lists and explains services available for RIC-LC.

Ethernet Management Traffic

RIC-LC can be managed using an out-of-band connection via the Ethernet port. In addition, you can create a management path via PSN to manage remote units.

The diagram below (*Figure 3-1*) illustrates the data flow for Ethernet management traffic between the Ethernet or PSN network ports and the host. *Table 3-1* illustrates the configuration steps corresponding to the numbers (callouts) in *Figure 3-1*.

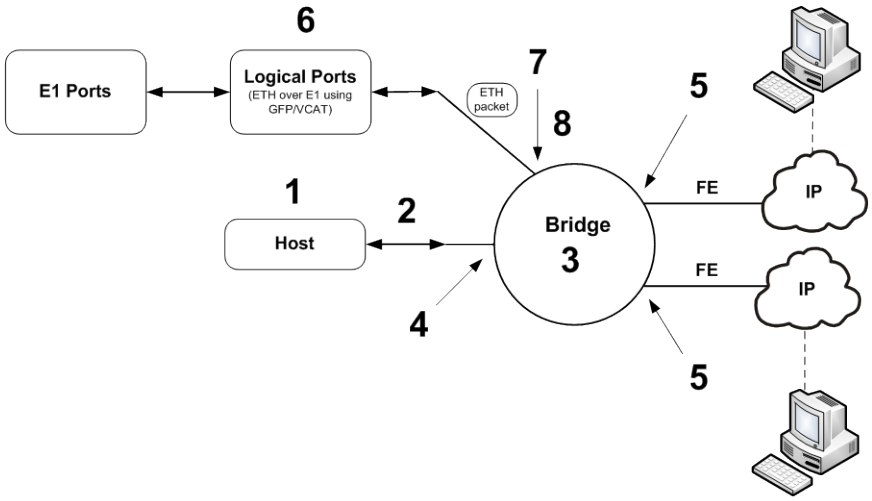


Figure 3-1. Ethernet Management Access Traffic Flow

Table 3-1. Ethernet Management Traffic Configuration

Callout	Step	Menu	Comments
1	*Configuring the Host IP Parameters.*	Options › Host	Assigns the IP address, IP mask and default gateway to the RIC-LC unit.
2	Defining a Host VLAN, as described in *Configuring the Host IP Parameters.*	Options › Host	Assigns the management VLAN to the host. VLAN Tagging must be enabled.
3	Configuring the bridge, as described in *Configuring the Bridge.*	Configuration › Bridge	
4	Configuring the bridge port parameters, as described in *Configuring the Bridge Ports.*	Configuration › Bridge › Bridge Port	Assigns the host bridge port parameters. You can configure Ingress filtering, Acceptable frame type, Port VID, etc.
5	Configuring Ethernet ports to the corresponding bridge ports, as described in *Configuring the Bridge Ports.*	Configuration › Bridge › Bridge Port	Depending on your requirements, you can configure Ingress filtering, Acceptable frame type, Port VID, etc.

Callout	Step	Menu	Comments
6	Defining logical ports, as described in *Configuring the Logical Port.*	Configuration › Logical Port	Logical ports define groups of E1 ports and parameters (GFP). This and the following steps are required to include the remote units in the Management VLAN.
7	Configuring the logical port to the corresponding bridge port, as described in *Configuring the Bridge Ports*.	Configuration › Bridge › Bridge Port	
8	Adding the bridge ports associated with the logical ports to the Management VLAN, as described in *Configuring VLAN Membership (Egress)*.	Configuration › Bridge › VLAN Membership (Egress)	Adds the Management VLAN ID to the bridge port.

Ethernet Traffic Services

The diagram below illustrates the data flow for Ethernet traffic between the relevant Ethernet or PDH and the PSN network ports. *Table 3-2* illustrates the configuration steps corresponding to the numbers (callouts) in *Figure 3-2*.

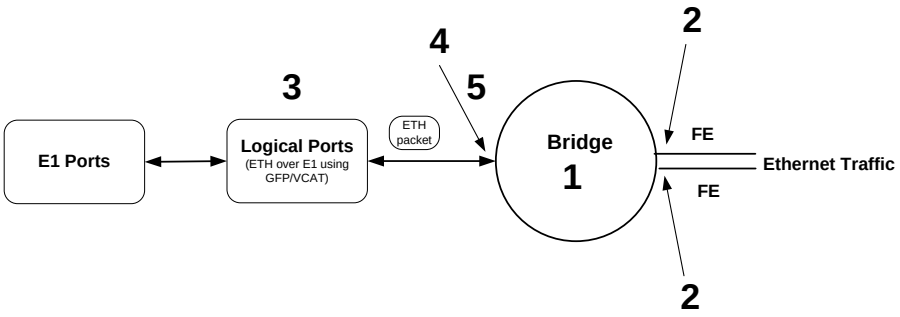


Figure 3-2. Ethernet Traffic Flow

Table 3-2. Ethernet Traffic Configuration

Callout	Step	Menu	Comments
1	Configuring the bridge, available under *Configuring the Bridge.*	Configuration › Bridge	
2	Configuring Ethernet ports to the corresponding bridge ports, available under *Configuring the Bridge Ports.*	Configuration › Bridge › Bridge Port	Depending on your requirements, you can configure Ingress filtering, Acceptable frame type, Port VID, etc.

Callout	Step	Menu	Comments
3	Defining logical ports, available under *Configuring the Logical Port.*	Configuration › Logical Port	Logical ports define groups of E1 ports and parameters (GFP).
4	Configuring the logical port to the corresponding bridge port, available under *Configuring the Bridge Ports*.	Configuration › Bridge › Bridge Port	
5	Adding the bridge ports associated with the logical ports to the Ethernet traffic VLAN, available under *Configuring VLAN Membership (Egress)*.	Configuration › Bridge › VLAN Membership (Egress)	Adds the Ethernet traffic VLAN ID to the bridge port.

3.2 Setting the System Parameters

RADview-EMS allows you to view and modify the system configuration parameters of the managed RIC-LC to prepare it for operation in your specific environment. The required tasks are as follows:

- Configuring the system logistics information
- Configuring the IP communication parameters (host IP addresses, DHCP)
- Defining network managers

After completing the general system configuration, make sure to review and set the required RIC-LC security options as detailed in *Chapter 5* of this manual.

Configuring System Logistics Information

The RIC-LC management software allows you to assign a name to the unit and its location, in order to distinguish it from the other devices installed in your system.

➤ **To view or modify system logistics information:**

1. From the shelf view window, click on the unit to select it.
2. Display the System Information menu (Configuration › **System Info**).
3. Fill in the fields, as described in *Table 3-3.*
4. Click ‹ **Set** › to save the changes and update the unit.

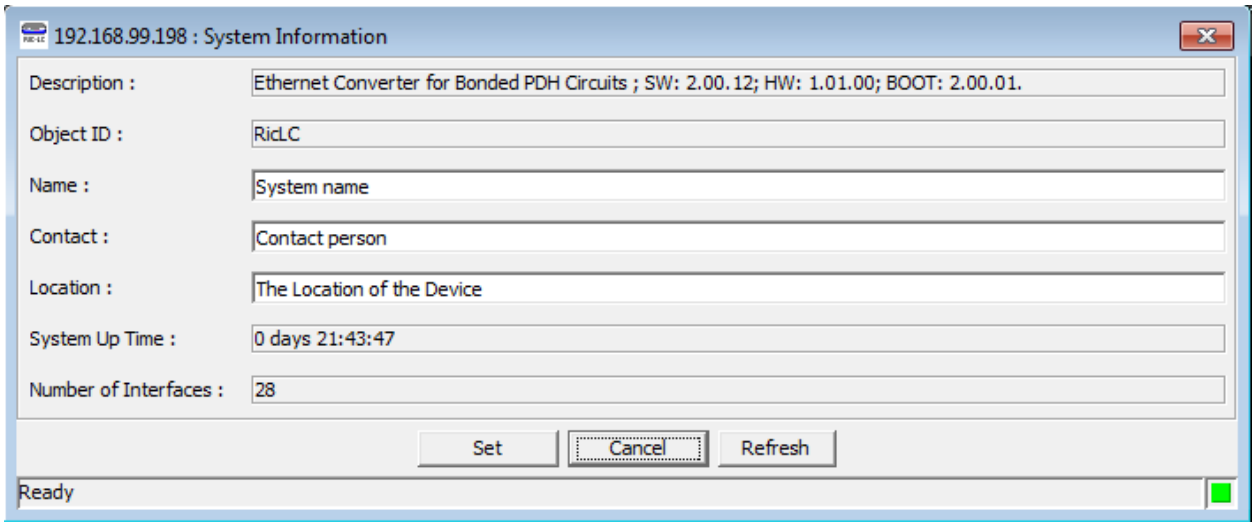


Figure 3-3. System Information

Table 3-3. System Information Parameters

Parameter	Description
Description	Displays the RIC-LC model, and its hardware and software versions
Object ID	Displays the formal RIC-LC object identifier
Name	Used to assign a name to the specific RIC-LC unit (up to 31 characters)
Contact	Used to enter the name of the person to be contacted in matters pertaining to this RIC-LC unit (up to 31 characters)
Location	Used to enter a description of the physical location of the RIC-LC unit (up to 31 characters)
System Up Time	Displays the time elapsed since the RIC-LC has been powered up, or since it has been reset for the last time
Number of Interfaces	Displays the total number of manageable interfaces present on RIC-LC

Configuring the Host IP Parameters

The **Host** dialog box is used to view and modify the IP communication parameters assigned to the RIC-LC management and service hosts.

➤ **To configure the host IP parameters:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Display the Host menu (Options › Host).
3. Fill in the fields, as described in *Table 3-4*.
4. Click ‹**Set**› to save the changes and update RIC-LC.

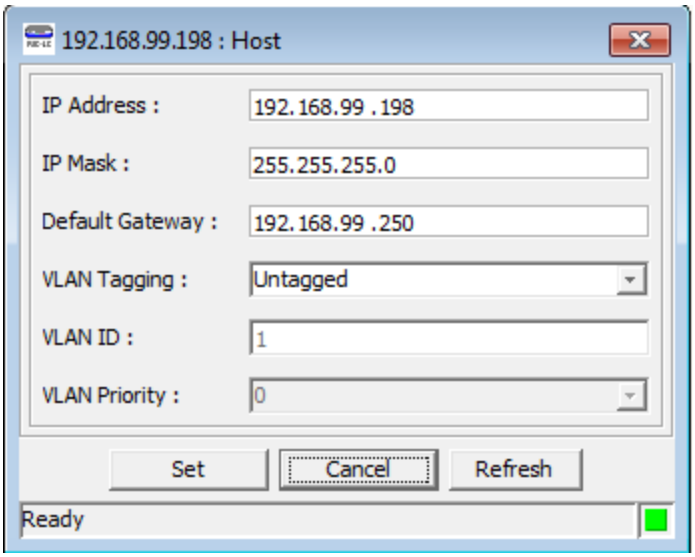


Figure 3-4. System Parameters

Table 3-4. System Parameters

Type	Parameter	Description	Values
Host	IP address	IP address of the RIC-LC agent	IP address
	IP Mask	IP subnet mask of the RIC-LC agent	IP subnet mask compatible with the selected IP address
	Default Gateway	IP address (usually an IP router port) to which the host sends frames when the destination IP address is not within the subnet specified in the Management IP Mask field. This IP address must be within the subnet of the host IP address. The default value, 0.0.0.0, means that no default gateway is defined.	IP address
	VLAN Tagging	Controls adding of VLAN tagging to management traffic.	**Tagged** – VLAN tagging is enabled **Untagged** – VLAN tagging is disabled
	VLAN ID	VLAN ID to be added to all management packets	**1–4094**
	VLAN Priority	VLAN priority value to be assigned to all management packets	**0–7**

Defining Network Managers

To remotely configure RIC-LC, the IP address of the NMS must be listed in the Manager List. Up to 10 managers can be defined.

➤ **To define a network manager:**

1. From the shelf view window, click on the RIC-LC unit to select it.

2. From the Manager List menu (Options › Manager List), select a manager and click ‹**Change**› to set a network manager (see *Figure 3-5*).
3. Fill in the fields, as described in *Table 3-5*.
4. Click ‹**Set**› to save the changes and update RIC-LC.

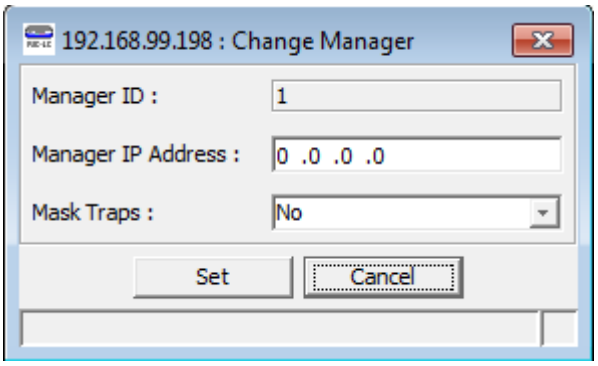


Figure 3-5. Add Manager

Table 3-5. Add Manager

Type	Parameter	Description	Values
Manager List	Manager ID	Network manager identification number	**1–10**
	Manager IP Address	IP address of the NMS	IP address
	Mask Traps	Controls sending alarm traps to the network manager	**No** – Traps are sent **Yes** – Traps are not sent

➤ **To delete a network manager:**

1. From the Manger List menu (see *Figure 3-6*), click on a network manager row to select it.
2. Click ‹**Change**› to set the Manager IP back to 0.0.0.0.

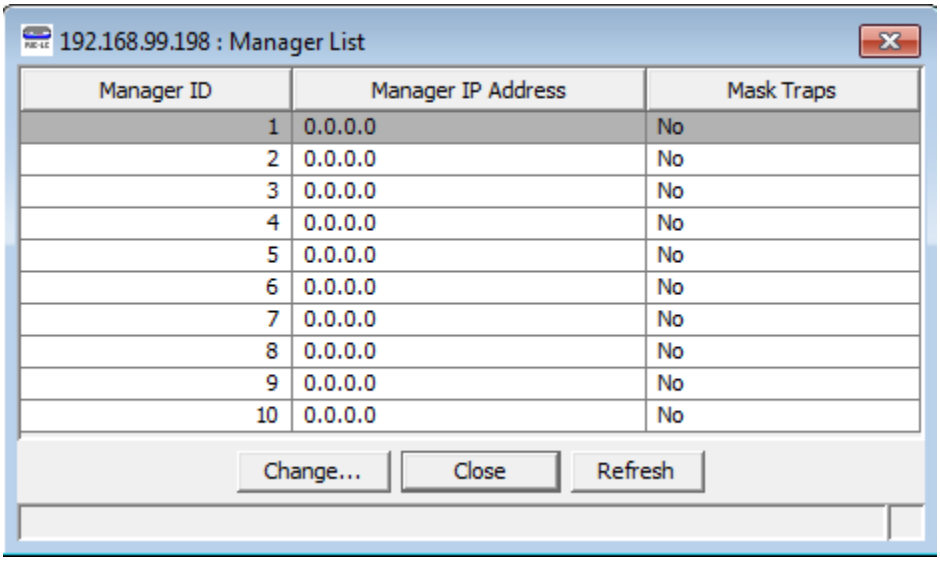


Figure 3-6. Manager List

3.3 Setting the Operational Parameters

RADview-EMS allows you to view and modify the operational parameters of the managed RIC-LC.

The recommended procedure for RIC-LC operation configuration includes the following stages:

1. Configuring the system clock
2. Configuring RIC-LC interfaces at the physical level
3. Configuring the logical port
4. Configuring the RIC-LC bridge

Configuring the System Clocks

The RIC-LC system timing mechanism ensures a single clock source for all TDM links by providing the master and fallback clocks. If the system clock is locked to one of the RIC-LC TDM links, it is necessary to define clock source (adaptive or loopback) and clock quality.

Note *The descriptions in this section refer to a device with multi-E1 ports.*

➤ **To configure the system clock:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Display the System Clocks menu (Configuration › System Clocks).
3. Fill in the fields, as described in *Table 3-6*.
4. Click ‹**Set**› to save the changes and update RIC-LC.

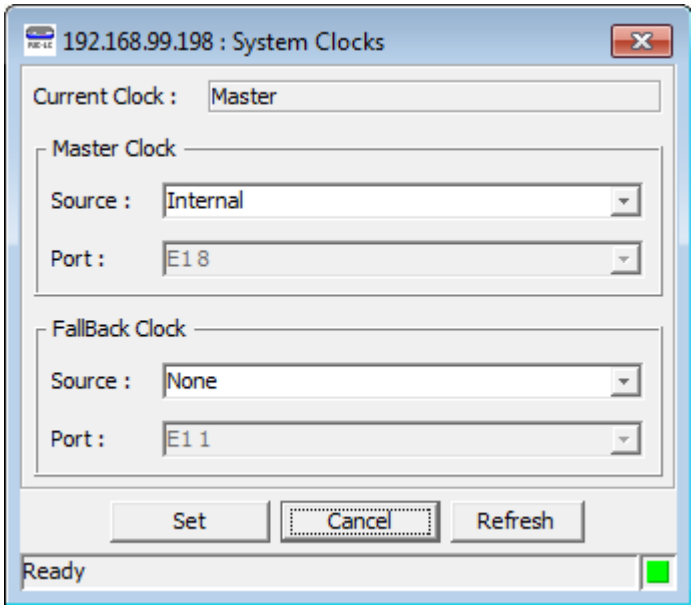


Figure 3-7. System Clock

Table 3-6. System Clock Parameters

Type	Parameter	Description	Values
	Current Clock	The clock that is currently in use	**Master**, **Internal**
Master Clock	Source	A master clock source	**Rx – E1** recovered Rx clock is used as the Tx clock **Internal** – Clock is provided by internal oscillator
	Port	Source of the master clock, when the master clock type is adaptive or Rx. Master clock is provided via one of the TDM links or the serial link. An E1 link can be locked to adaptive or loopback clock.	**E1 1–16** – E1 port 1–16 serves as a source for the master clock
Fallback Clock	Source	A fallback clock source	**None** – Fallback clock is not used **Rx** – E1 recovered Rx clock is used as the Tx clock
	Port	Source of the fallback clock, when the master clock type is adaptive or Rx. Fallback clock is provided via one of the TDM links or the serial link. An E1 link can be locked to adaptive or loopback clock.	**E1 1–16** – E1 port 1–16 serves as a source for the fallback clock

Configuring Interfaces at the Physical Level

Before creating PW connections, it is necessary to configure the physical layer parameters of the E1 and Ethernet interfaces.

Configuring the E1 Interface

The physical layer parameters of the RIC-LC E1 interfaces are configured via the Port Parameters menu.

➤ **To configure the E1 interface:**

1. From the shelf view window, click on an E1 port to select it.
2. Display the Port Parameters menu (Configuration › Port Parameters).
3. Fill in the fields, as described in *Table 3-7*.
4. Click ‹**Set**› to save the changes and update RIC-LC.

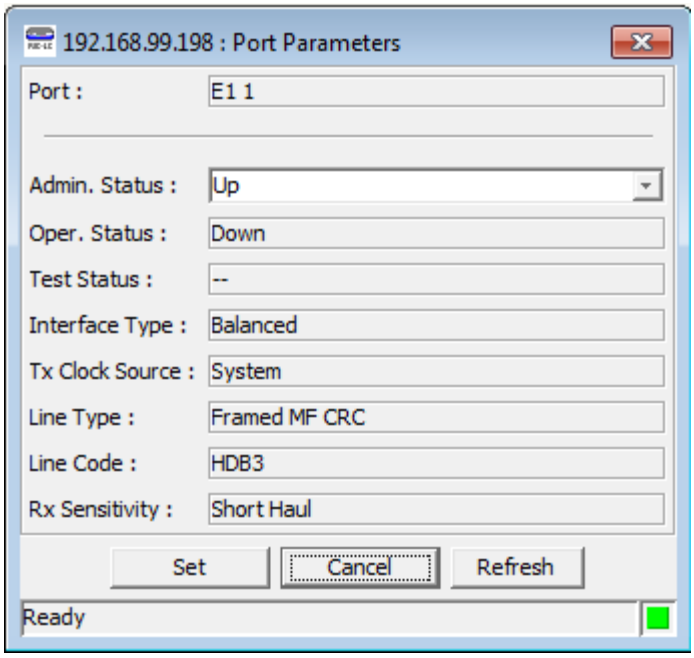


Figure 3-8. E1 Port Parameters

Table 3-7. E1 Interface Parameters

Parameter	Description	Values
Admin. Status	Administrative status of the E1 link	**Up** – E1 link is enabled **Down** – E1 link is disabled
Oper. Status	Operational status of the E1 port Read only	**Up** – E1 port is operational **Down** – E1 port is not operational
Test Status	Status of an E1 diagnostic test Read only	**...** – No diagnostic test is in progress **External Loopback –** External loopback is in progress **External Bert** – External BERT is in progress
Interface Type	Read only	**Balanced** **Unbalanced**
TX Clock Source	Source of the E1 Tx clock Read only	**System** – System clock is used as the Tx clock
Line Type	E1 framing mode Read only	**Framed MF CRC** –CAS enabled, CRC-4 function enabled
Line Code	E1 line code Read only	**HDB3**
Rx Sensitivity	Maximum attenuation of the receive signal that can be compensated for by the interface receive path Read only	**Short haul**: -10 dB

Configuring the Ethernet Interface

The physical layer parameters of the RIC-LC Ethernet interface are configured via the Port Parameters menu.

➤ **To configure the Ethernet interface:**

1. From the shelf view window, click on an Ethernet port to select it.
2. Display the Port Parameters menu (Configuration › **Port Parameters**).
3. Fill in the fields, as described in *Table 3-8*.
4. Click ‹**Set**› to save the changes and update RIC-LC.

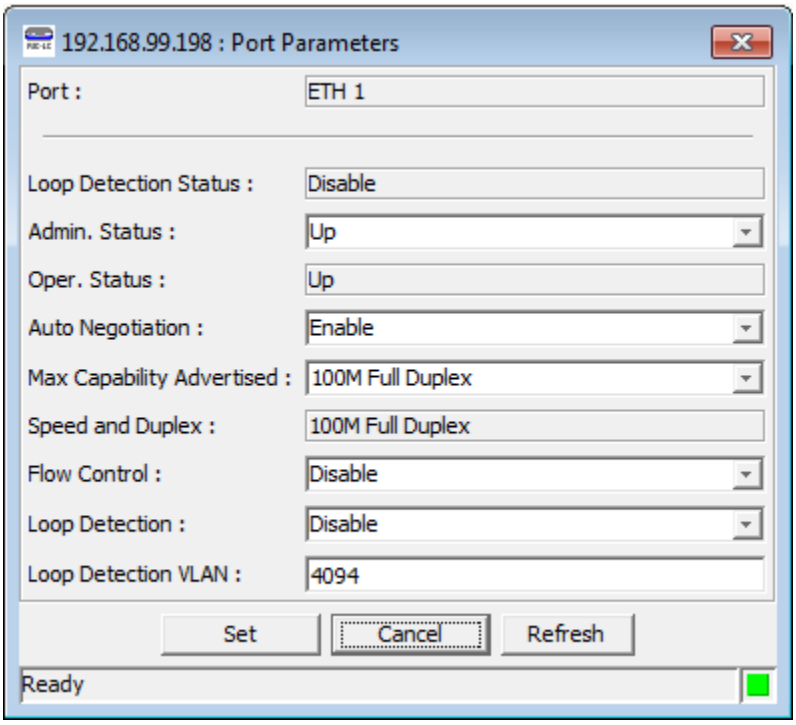


Figure 3-9. Ethernet Port Parameters (Physical Layer)

Table 3-8. Ethernet Interface Parameters

Parameter	Description	Values
Port	Ethernet port designation Read-only	**ETH 1-4** – Ethernet port 1-4
Loop Detection Status	Operational status of Loop Detection	**Enable**- Loop detection enabled **Disable**- Loop detection disabled
Admin. Status	Administrative status of the FE port	**Up** – FE port is enabled **Down** – FE port is disabled
Oper. Status	Operational status of the Ethernet port	**Up** – Port is operational **Down** – Port is not operational
Auto Negotiation	Ethernet port autonegotiation functionality	**Enable** – Autonegotiation is enabled **Disable** – Autonegotiation is disabled

Parameter	Description	Values
Max Capability Advertised	Maximum capability to be advertised during the autonegotiation process	10M Half Duplex 10M Full Duplex 100M Half Duplex 100M Full Duplex
Speed and Duplex	Rate and duplex mode, if the autonegotiation is disabled	10M Half Duplex 10M Full Duplex 100M Half Duplex 100M Full Duplex
Flow Control	Data flow control method based on Ethernet Pause frames. If the flow control is enabled, RIC-LC received the Pause frames sent by the peer device, slowing its transmission rate.	**Enable** – Flow control is enabled **Disable** – Flow control is disabled
Loop Detection	Loop detection on Ethernet Port	**Enable** –Loop detection is enabled **Disable** –Loop detection is disabled
Loop Detection VLAN		**1-4094**

Configuring the Logical Port

Note *Descriptions of this section are about the device with multi-E1 ports.*

You can map multiple E1 ports to a VCAT VCG group, via the Logical Layer menu.

To ease configuration effort and save time, the RIC-LC unit is supplied with the logical ports preconfigured (see the table below).

A logical port in RIC-LC is either a VCG logical port bound to physical E1 ports, or a GFP logical port that is bound to a VCG logical port. When you create a VCG logical port, RIC-LC automatically creates a GFP logical port that is bound to the VCG logical port, and configures a bridge port bound to the GFP logical port. Therefore, you only need to add/delete VCG logical ports. You do not manually add/delete GFP logical ports.

You can only create one VCG logical port.

Note *A physical port can be bound to only one logical VCG port.*

Table 3-9. Default Logical Port Settings for E1 Network Interface

Logical Port	Interface Type	Port Name	Bound to
1	VCG	VCG 1	Physical (E1) ports 1–16
2	GFP	GFP 1	Logical port VCG 1

➤ **To configure the logical port:**

1. From the shelf view window, click on the device to select it.

2. Display the Logical Ports (Configuration › Logical Port).
3. Configure the logical parameters for each port. Parameter descriptions and possible values are provided in *Table 3-10*.
4. Click ‹**Set**› to save new settings.

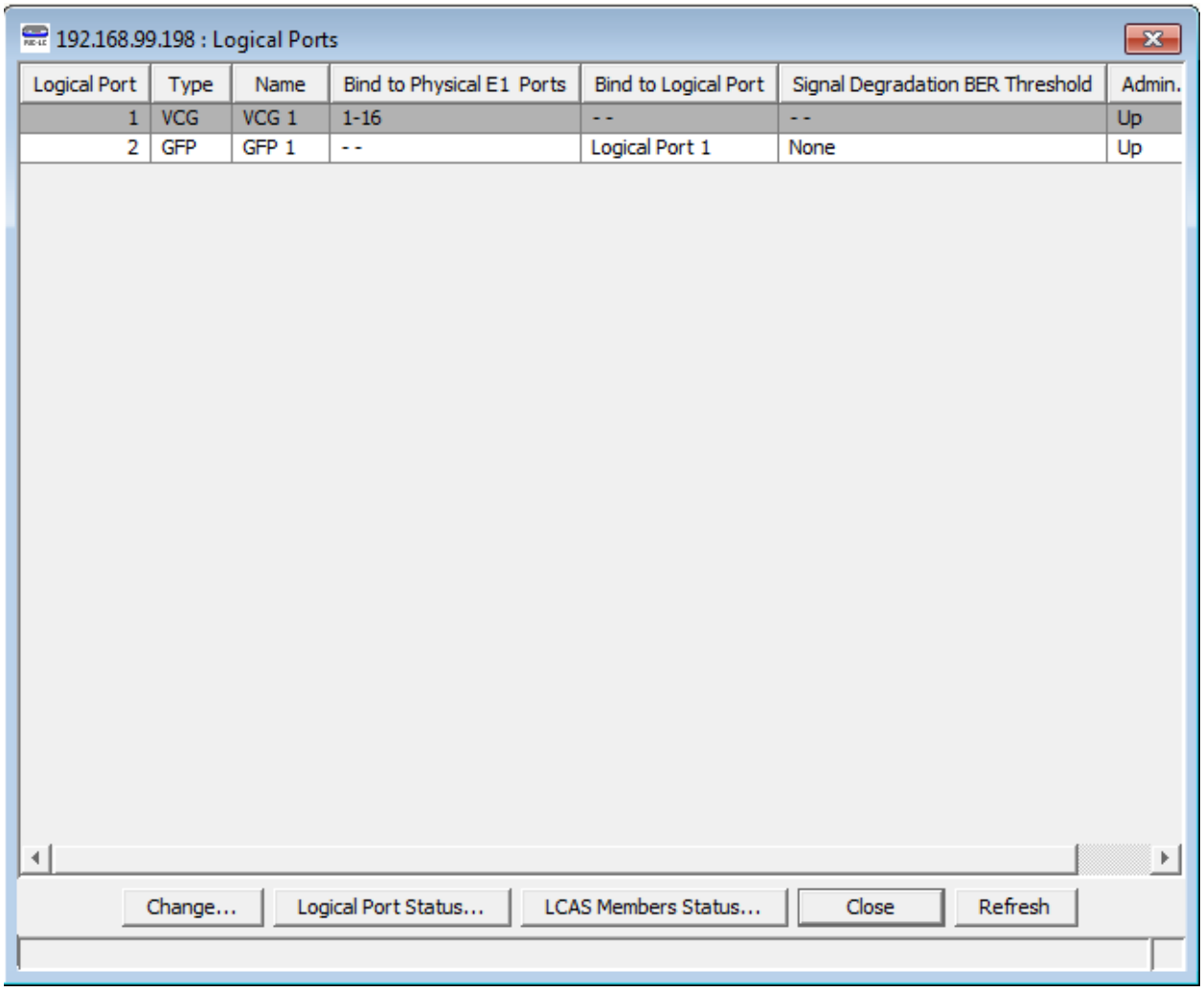


Figure 3-10. Logical Ports Display

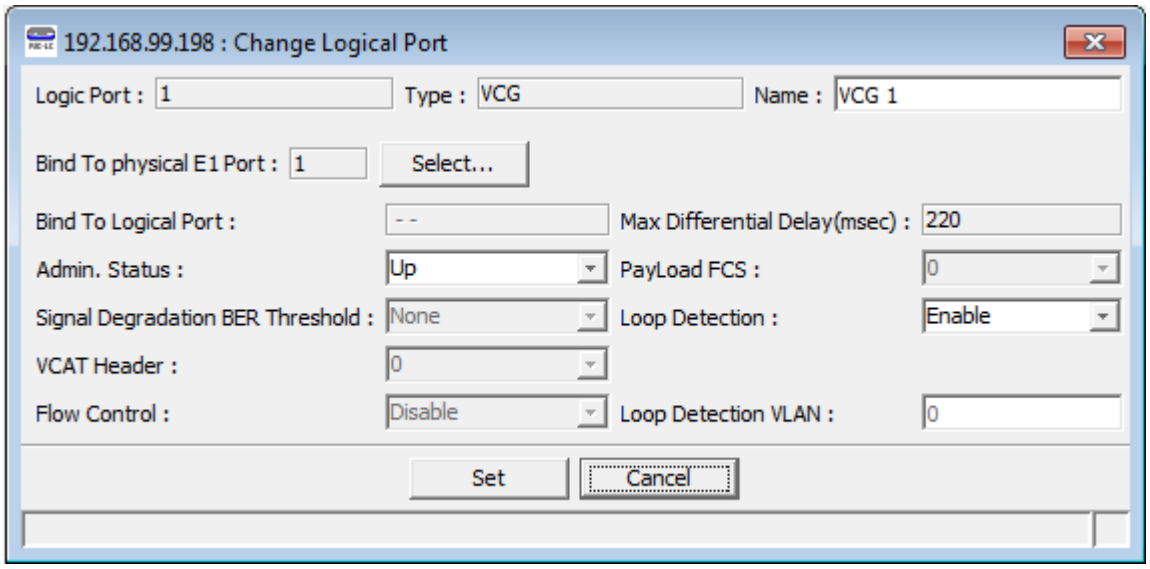

192.168.99.198 : Change Logical Port
Logic Port : 1
Type : VCG
Name : VCG 1
Bind To physical E1 Port : 1
Select...
Bind To Logical Port : - -
Max Differential Delay(msec) : 220
Admin. Status : Up
PayLoad FCS : 0
Signal Degradation BER Threshold : None
Loop Detection : Enable
VCAT Header : 0
Flow Control : Disable
Loop Detection VLAN : 0
Set
Cancel

Figure 3-11. Change Logical Port (VCG)

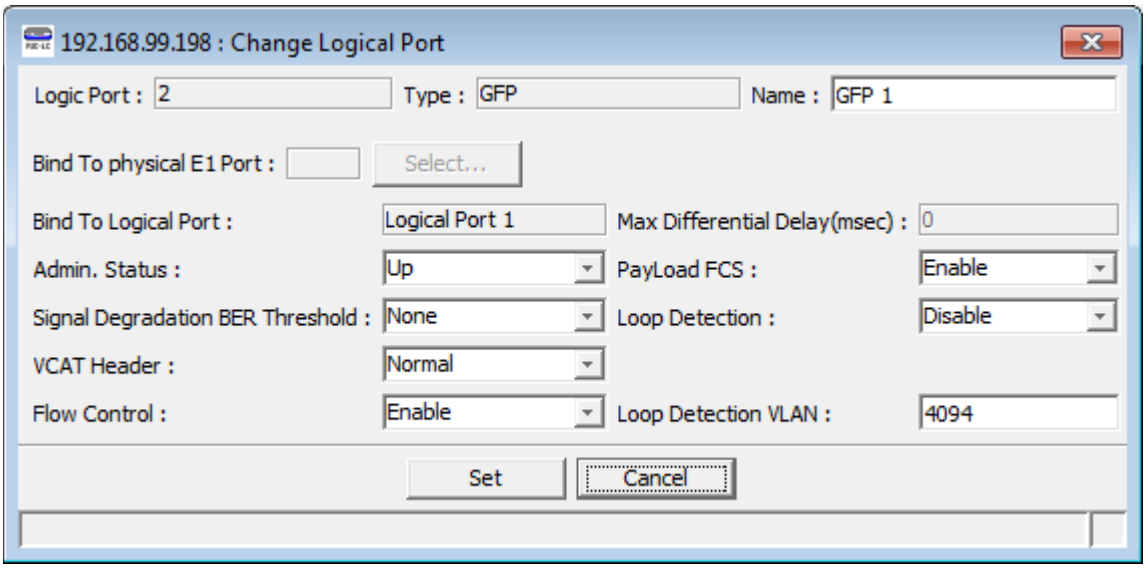

192.168.99.198 : Change Logical Port
Logic Port : 2
Type : GFP
Name : GFP 1
Bind To physical E1 Port :
Select...
Bind To Logical Port : Logical Port 1
Max Differential Delay(msec) : 0
Admin. Status : Up
PayLoad FCS : Enable
Signal Degradation BER Threshold : None
Loop Detection : Disable
VCAT Header : Normal
Flow Control : Enable
Loop Detection VLAN : 4094
Set
Cancel

Figure 3-12. Change Logical Port (GFP)

Table 3-10. Logical Port Parameters

Parameter	Description	Possible Values
Logical Port	The logical port being configured	1–2
Type	Type of interface set for the port. This parameter is read-only	VCG GFP
Name	Free text to assign a name to the logical port	VCG 1 GFP 1
Bind to Physical E1 Ports	VCAT VCG Logical Port: E1 links that are members of the VCG	1–16
Bind to Logical Port	GFP Logical Port: Links to VCG. This parameter is read-only	Logical Port 1

Parameter	Description	Possible Values
Admin. Status	Administrative state of the logical port	Up Down
Signal Degradation BER Threshold	Signal degrade threshold	None, 10E-5, 10E-6, 10E-7, 10E-8, 10E-9
VCAT Header	Usage mode of the VCAT byte position. VCAT Header can be set when the VCG logical port binds to one physical port only.	Normal Null Reserved
Flow Control	Data flow control method based on Ethernet Pause frames. If the flow control is enabled, RIC-LC received the Pause frames sent by the peer device, slowing its transmission rate.	**Enable** – Flow control is enabled **Disable** – Flow control is disabled
Max Differential Delay (msec)	Maximum allowed delay variation in milliseconds. This parameter is read-only	0-220
Payload FCS	GFP payload FCS	Enable Disable
Loop Detection	Looped members are automatically detected and not added to the LCAS when loop detection is enabled. The VCG restarts after enabling or disabling the loop detection	Enable Disable
Loop Detection VLAN	The VLAN that must be excluded from VLAN membership	1–4094

Configuring the Bridge

RIC-LC contains an internal bridge connected to the external unit's ports. The bridge operates in the VLAN-aware and VLAN-unaware modes. Learning and filtering can be enabled or disabled. Static MAC addresses are stored in the MAC table. Each bridge port can be assigned to a VLAN.

➤ **To configure the bridge parameters:**

1. Display the Bridge Parameters menu (Configuration › Bridge › Parameters).
2. Fill in the fields, as described in *Table 3-11*.
3. Click ‹**Set**› to save the changes and update RIC-LC.

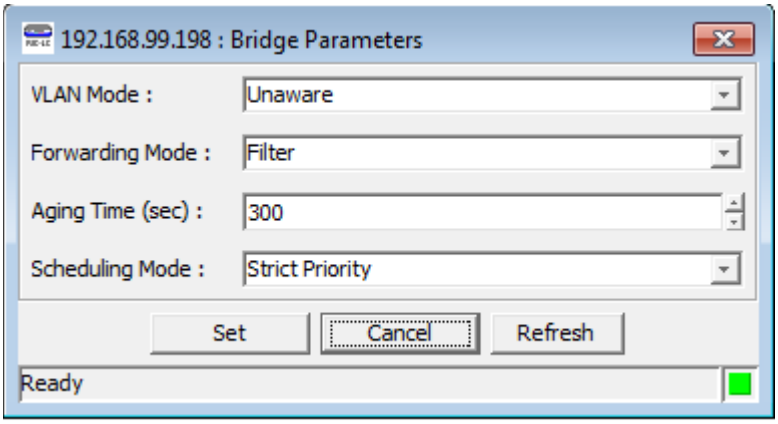


Figure 3-13. Bridge Parameters

Table 3-11. Bridge Parameters

Parameter	Description	Values
VLAN Mode	VLAN handling mode of the bridge	**Aware** – The RIC-LC bridge handles VLANs **Unaware** – The RIC-LC bridge does not handle VLANs
Forwarding Mode	Forwarding mode of the bridge	**Transparent** – No filtering is performed. RIC-LC forwards all received frames. **Filter** – RIC-LC filters traffic according the received MAC addresses
Aging Time	Amount of time a LAN node is allowed to be inactive before it is removed from the network. Entering 0 disables the aging. When the aging is disabled, static address entries are never aged or removed from the table.	**0–3825** sec
Scheduling Mode	Scheduling mode of the bridge	Strict Priority – All top priority frames egress until the priority queue is empty. Then the next lower priority queue frames egress, etc. The strict scheme can cause the lower priorities to be starved out preventing them from transmitting any frames, but also ensures that all high priority frames egress the switch as soon as possible. Weighted – All frames are round-robin scheduled according to an 8-4-2-1 weighting for the Traffic Class queue 3, Traffic Class queue 2, Traffic Class queue 1, and Traffic Class queue 0. It prevents the lower priority frames from being starved out with only a slight delay to the higher priority frames.

Configuring VLAN Membership (Egress)

Each RIC-LC Ethernet port can be defined as a VLAN member. The ports can also be configured to add, strip or ignore the VLAN tag at the egress.

➤ **To configure the VLAN membership:**

1. From the VLAN Membership (Egress) menu (Configuration › Bridge › VLAN Membership (Egress)), click **‹Add...›**.

   The Add VLAN Membership (Egress) menu is displayed (*Figure 3-14*).

2. Fill in the fields, as described in *Table 3-12*.

3. Click ‹**Set**› to save the port VLAN assignments.

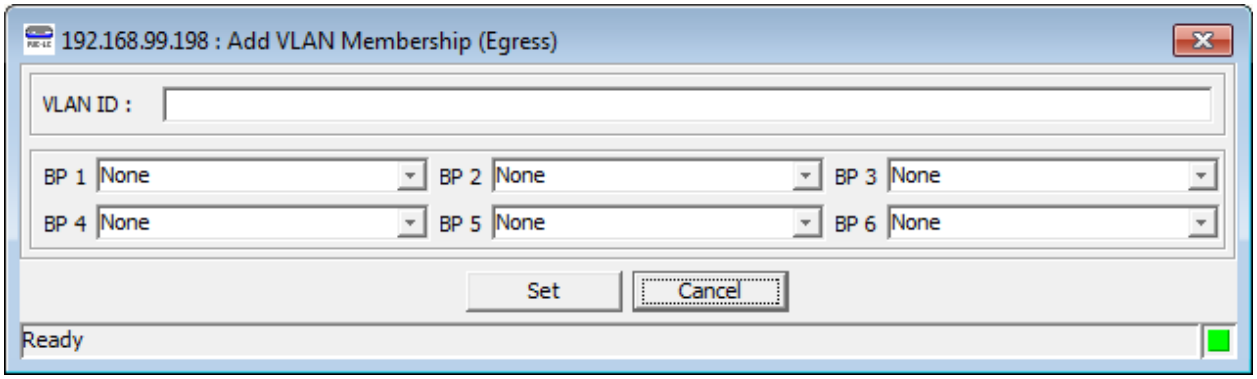


Figure 3-14. Add VLAN Membership (Egress)

Table 3-12. VLAN Membership Parameters

Parameter	Description	Values
VLAN ID	A VLAN which the bridge ports will be assigned	1–4094
BP1-6	Operation mode of bridge ports 1-6	**Tagged** – The port adds the tag of the current VLAN to all frames at its egress **Untagged** – The port strips the tag of the current VLAN to all frames at its egress **None** – The port does not belong to the current VLAN. If all ports are configured to None for a VLAN, RIC-LC discards all frames with this VLAN ID.

➤ **To edit the VLAN membership settings:**

1. From the VLAN Membership (Egress) menu (Configuration › Bridge › VLAN Membership (Egress)), select a VLAN that you intend to modify and click **‹Change...›**.

   The **Change VLAN Membership (Egress)** menu is displayed (*Figure 3-15*).

2. Fill in the fields, as described in *Table 3-12*.

3. Click ‹**Set**› to save the settings.

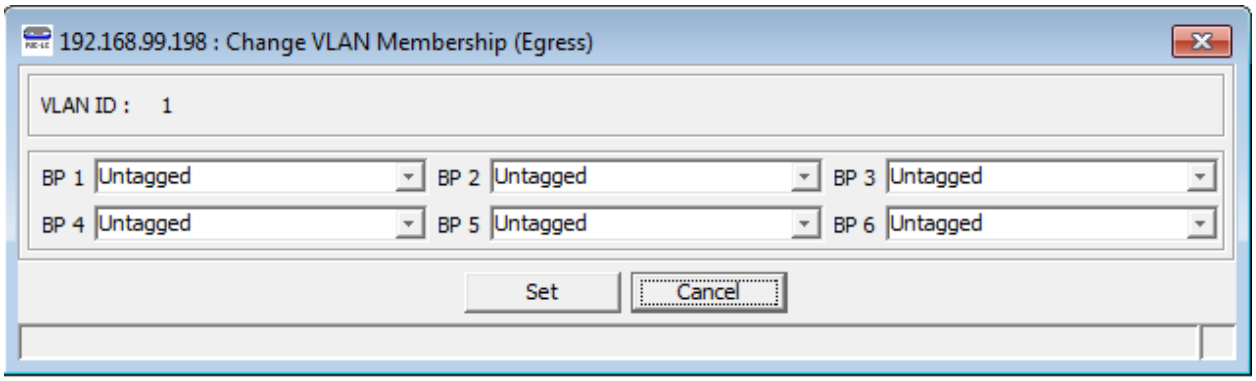


Figure 3-15. Change VLAN Membership (Egress)

➤ **To delete a VLAN:**

- From the VLAN Membership (Egress) menu, select a VLAN that you intend to delete and click **‹Remove›**.

Configuring the Static MAC Table

You can add static MAC addresses to the RIC-LC MAC table. When the bridge operates in the VLAN-aware mode, it is possible to assign VLAN ID to a MAC address.

➤ **To configure the static MAC table:**

1. From the MAC Table menu (Configuration › Bridge › MAC Table), click **‹Add...›**.

   The **Add Static Unicast MAC Entry** menu is displayed (*Figure 3-16*).

2. Fill in the fields, as described in *Table 3-13*.
3. Click **‹Set›** to save the new settings.

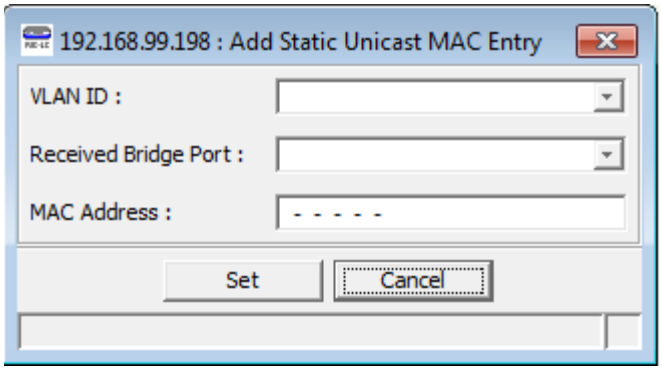


Figure 3-16. Add Static MAC Address

Table 3-13. Static MAC Table Parameters

Parameter	Description	Values
VLAN ID	A VLAN ID with which frames from the current MAC address are expected to arrive	**1–4094**
Received Bridge Port	The RIC-LC bridge port this MAC address will be attached to	**BP 2-6**

Parameter	Description	Values
MAC Address		A static MAC address

➤ **To delete a static MAC address:**

- From the MAC Table menu (*Figure 3-17*), select a MAC address that you want to delete and click **<Remove>**.

  The selected static MAC address is removed from the table.

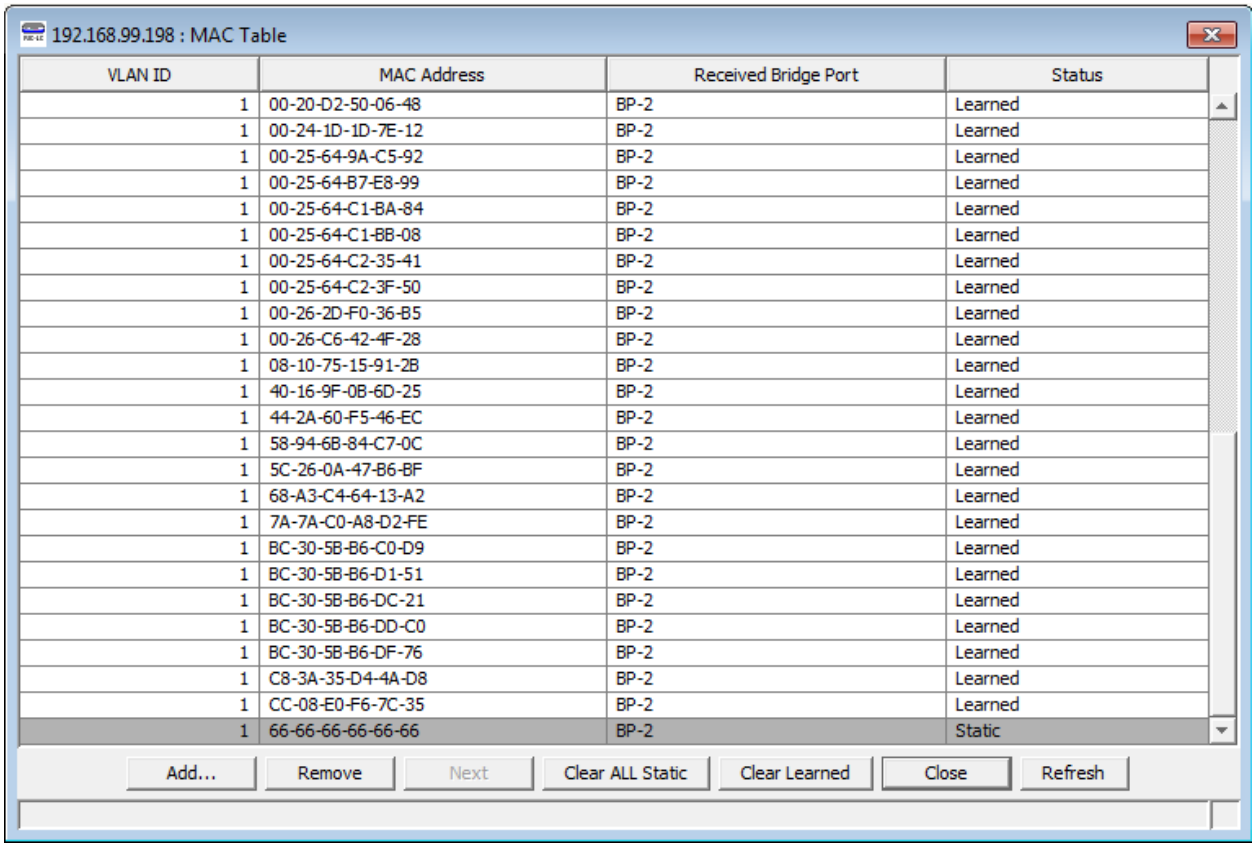


Figure 3-17. Static MAC Address

➤ **To delete all static MAC addresses:**

1. From the MAC Table menu, select **<Clear ALL Static>**.

   RIC-LC displays a confirmation message.

2. Click **<OK>** to confirm the deletion.

   Static MAC addresses are deleted.

➤ **To delete all dynamic MAC addresses:**

1. From the MAC Table menu, select **<Clear Learned>**.

   RIC-LC displays a confirmation message.

2. Click **<OK>** to confirm the deletion.

   Dynamic MAC addresses are deleted.

Configuring the Bridge Ports

RIC-LC bridge ports support filtering of incoming traffic, accepting all frames of only those, which have VLAN tags. The incoming frames can also be assigned default PVID and priority values.

➤ **To configure the bridge port:**

1. Display the Bridge Port menu (Configuration › Bridge › Bridge Port).

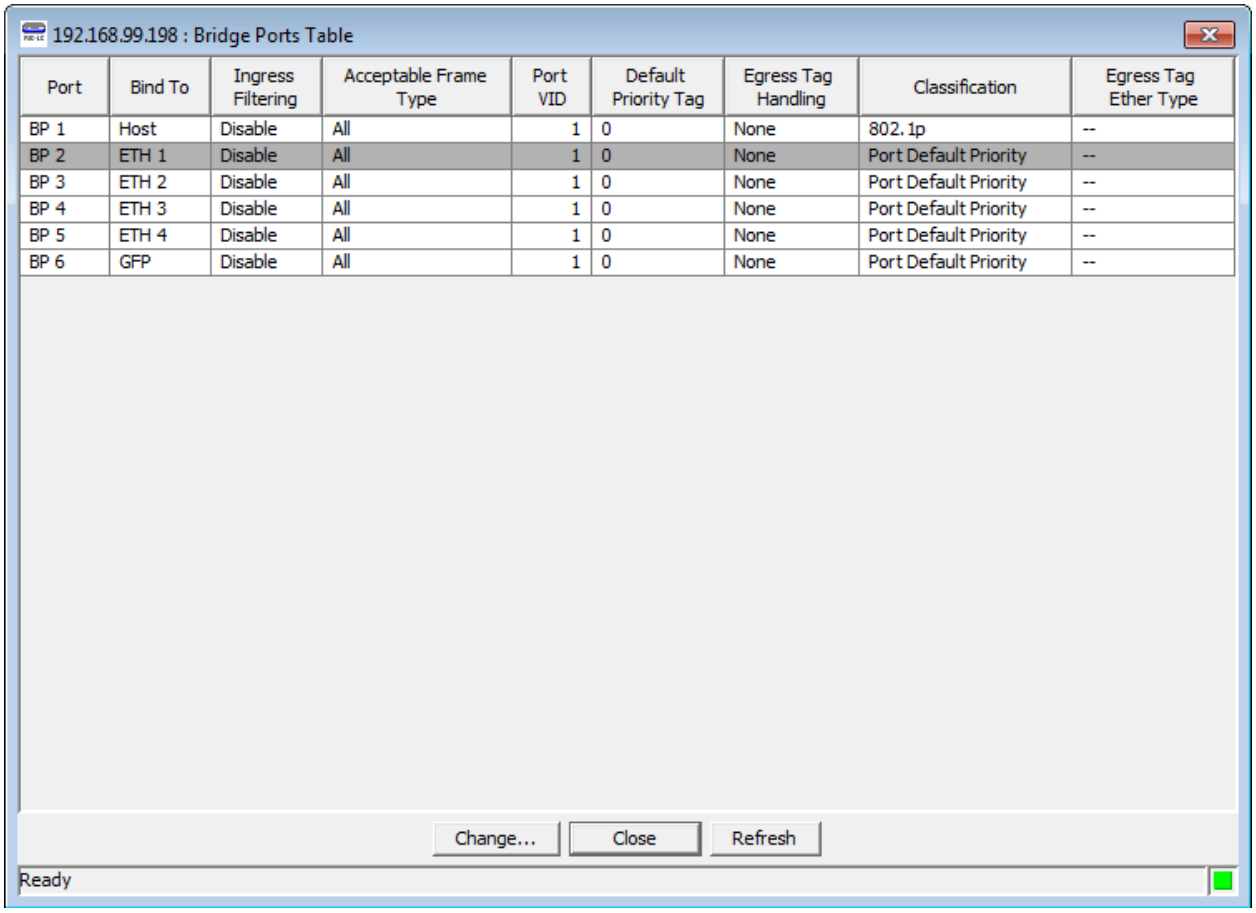

192.168.99.198 : Bridge Ports Table
Port
Bind To
Ingress Filtering
Acceptable Frame Type
Port VID
Default Priority Tag
Egress Tag Handling
Classification
Egress Tag Ether Type
BP 1 Host Disable All 1 0 None 802.1p --
BP 2 ETH 1 Disable All 1 0 None Port Default Priority --
BP 3 ETH 2 Disable All 1 0 None Port Default Priority --
BP 4 ETH 3 Disable All 1 0 None Port Default Priority --
BP 5 ETH 4 Disable All 1 0 None Port Default Priority --
BP 6 GFP Disable All 1 0 None Port Default Priority --
Change...
Close
Refresh
Ready

Figure 3-18. Bridge Port Menu

2. Select a bridge port and Click ‹**Change**› to the modify it.

   The bridge port parameters are displayed.

3. Fill in the fields, as described in *Table 3-14*.
4. Click ‹**Set**› to save the changes and update RIC-LC.

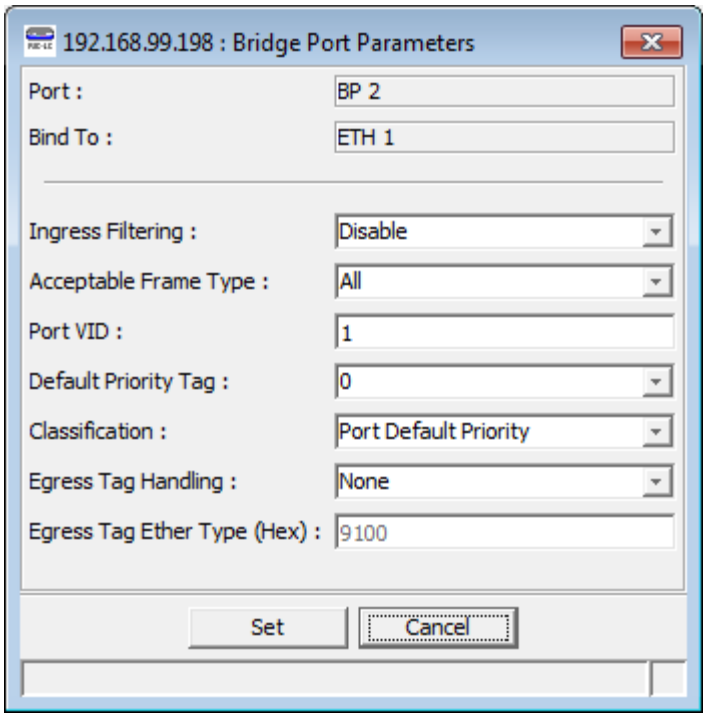


Figure 3-19. Bridge Port Parameters

Table 3-14. Bridge Port Parameters

Parameter	Description	Possible Values
Port	Bridge port number	Bridge Port 1-6
Bind to	Number that identifies the bridge port displayed. Bridge port 1 is reserved for the host bridge port. Read-only.	Host Eth1-4 GFP
Ingress Filtering	Specifies whether or not this port is available.	Enable Default: **Disable**
Acceptable Frame Type	When enabled, the device discards incoming frames for VLANs of which the port is not a member. When disabled, the port accepts all incoming frames.	Default: **All** Tagged Only
Port VID	**Tag Only** specifies that the device discards untagged frames. **All** specifies that untagged frames received on this port are accepted and assigned to the PVID for this port.	1–4094 Default: **1**
Default Priority Tag	**Enable**: The priority tag of the original VLAN is copied if a frame arrives with a stacked VLAN tag, otherwise the default priority is used **Disable**: The default priority is used	0–7 Default: **0**

Parameter	Description	Possible Values
Classification	Traffic classification method	802.1p DCSP Port Default Priority
Egress Tag Handling	Stacking: Adds the PVID to every frame transmitted from the port (push).	Default: **None** Stacking
Egress Tag Ether Type (Hex)	For the received frame, add the TPID to the egress of the port.	0000-ffff

Configuring the QoS

RIC-LC supports three methods of traffic classification:

- 802.1 priority mapping
- DSCP priority mapping
- Port default priority mapping

Configuring the Traffic Priority

RIC-LC provides four priority queues for each bridge port. User traffic can be prioritized according to the VLAN priority, DSCP or per bridge port basis.

➤ **To define the traffic priority:**

1. Select a traffic classification method for a RIC-LC bridge port.
2. Map each value (802.1p tag or DSCP) to a traffic class (0–3).

Selecting a Traffic Classification Method

A traffic classification method must be selected for each RIC-LC bridge port.

➤ **To select a traffic classification method:**

1. Display the Bridge Port Table menu (Configuration › Bridge Port).
2. Select a bridge port and Click ‹**Change**›
3. Fill in the fields, as described in *Table 3-15*.
4. Click ‹**Set**› to save the changes and update RIC-LC.

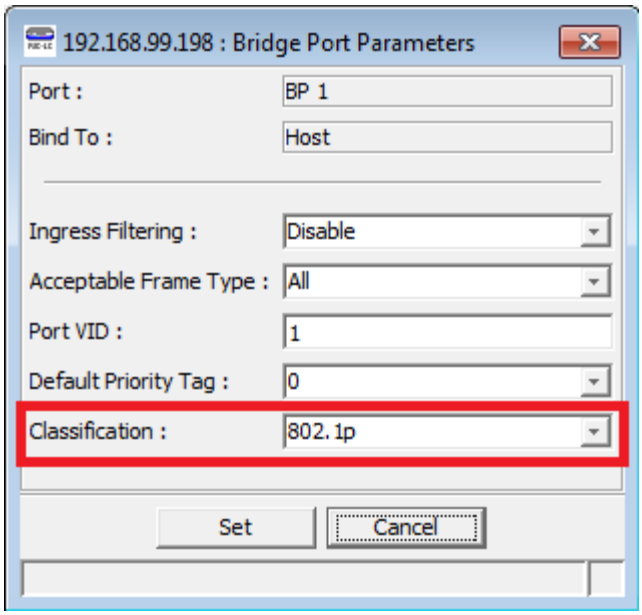


Figure 3-20. Classification Parameters

Table 3-15. Classification Parameters

Parameter	Description	Values
Classification	Traffic classification method used by the current port	**802.1p** –Priority is determined according to VLAN priority **DSCP** – Priority is determined according to the Differentiated Services Codepoint, as specified in RFC 2474 **Port Default Priority** – Priority is determined by the port default VLAN priority. In the case of the pseudowire and management traffic, it is copied from the service host priority setting. If no service host is configured, the priority is determined by the management host value.

Mapping Priority to the Traffic Classes

Each traffic classification method must be mapped to one of the four traffic classes (priority queues).

➤ **To map priority to a traffic class:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. From the Configuration › QoS › Mapping, select a traffic classification method you intend to map: 802.1p, DSCP, or port default priority.

   The relevant configuration menu is displayed (*Figure 3-21*, *Figure 3-22*, *Figure 3-23*).
3. From the 802.1p or DSCP, click on a traffic class value to select it.
4. Click **‹Traffic Class›** and select a traffic class to be assigned to priority tag value. The configuration values are described in *Table 3-16*.

Note *Port Default Priority tag values are permanently mapped to traffic classes 0–3 as illustrated in Figure 3-23.*

5. Click ‹**Set**› to save the changes and update RIC-LC.
6. After updating RIC-LC, click ‹**Refresh**›.

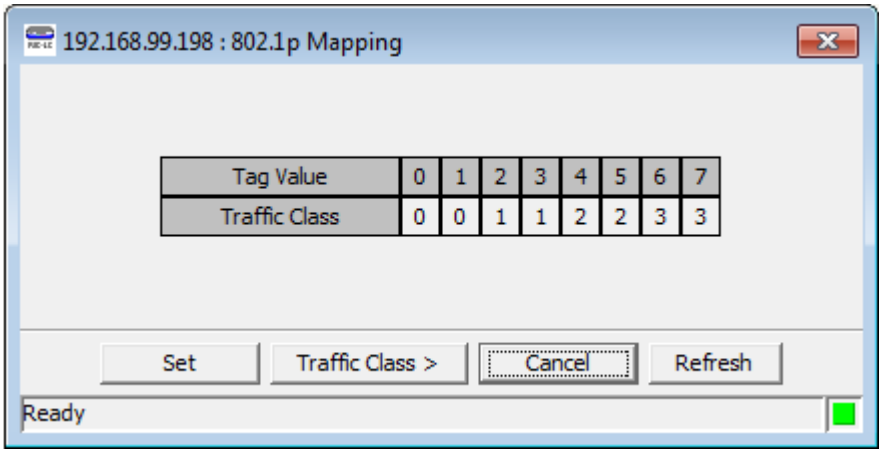


Figure 3-21. 802.1p Mapping

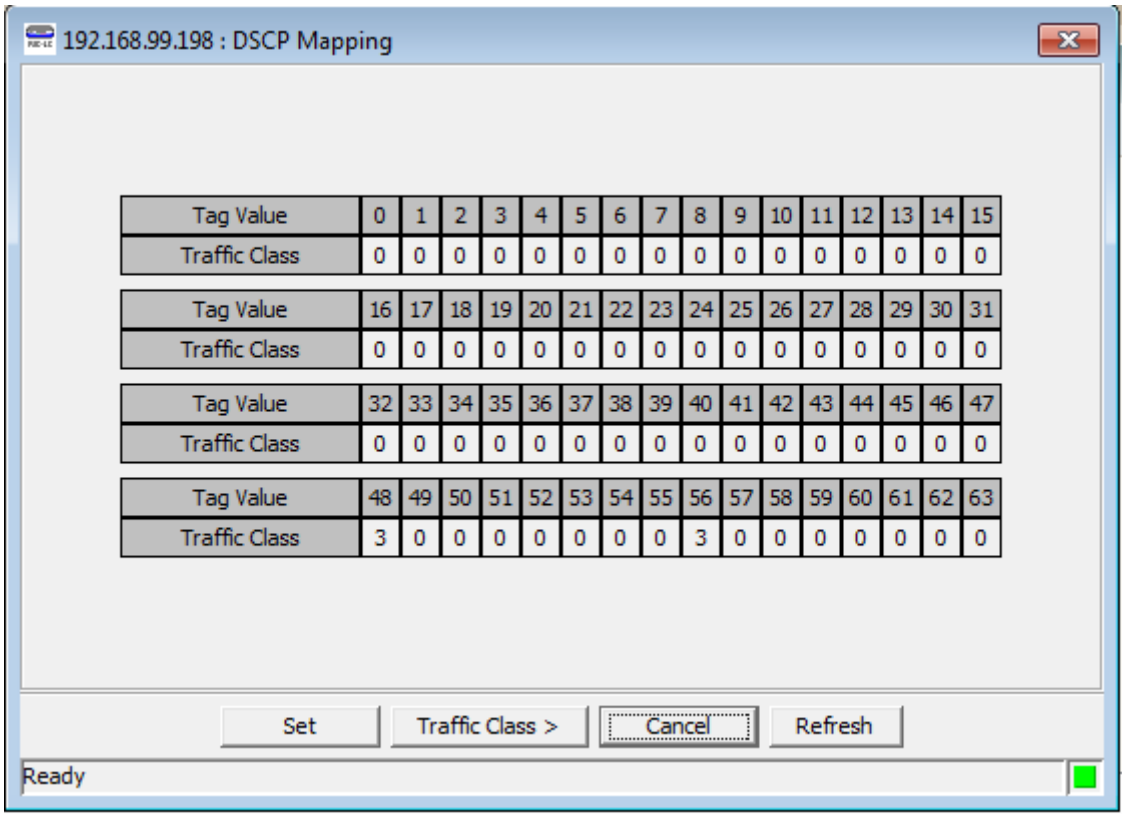


Figure 3-22. DSCP Mapping

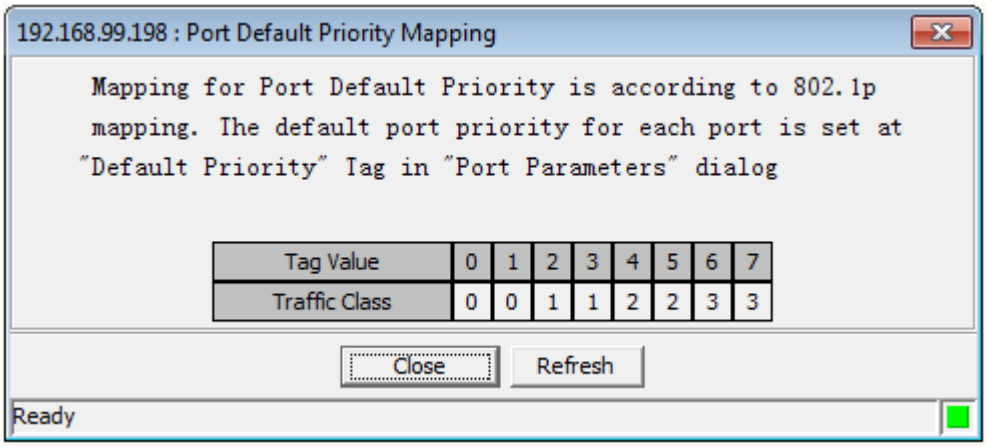

192.168.99.198 : Port Default Priority Mapping
Mapping for Port Default Priority is according to 802.1p mapping. The default port priority for each port is set at "Default Priority" Tag in "Port Parameters" dialog
Tag Value 0 1 2 3 4 5 6 7
Traffic Class 0 0 1 1 2 2 3 3
Close
Refresh
Ready

Figure 3-23. Port Default Priority Mapping

Table 3-16. Priority Mapping Parameters (Device Level)

Parameter	Description
802.1p Mapping	Assigns each priority tag, supported by IEEE 802.1p (0–7) to a specific priority queue – Traffic Class 0 (lowest), Traffic Class 1, Traffic Class 2, or Traffic Class 3 (highest)
DSCP	Assigns each DS codepoint (0–63) to a specific priority queue – Traffic Class 0 (lowest), Traffic Class 1, Traffic Class 2, or Traffic Class 3 (highest)
Port Default Priority	Displays permanent priority tag assignments. For description of how define a port default priority, see the *Configuring the Bridge Ports* section above.

Configuring the Rate Limitation

RIC-LC supports data rate limitation at the egress and ingress of the Ethernet ports. RIC-LC limits the data rate proper, without taking into account Ethernet frame intergaps.

➤ **To configure rate limitation:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Display the Rate Limitation menu (Configuration › QoS › Rate Limitation).
3. Fill in the fields, as described in *Table 3-17*.
4. Click ‹**Set**› to save the changes and update RIC-LC.

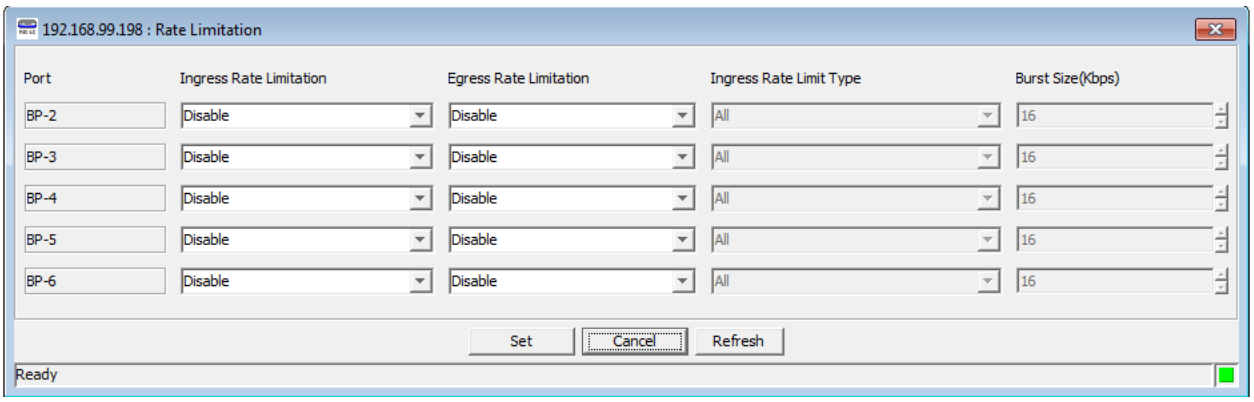


Figure 3-24. Rate Limitation

Table 3-17. Rate Limitation Parameters

Parameter	Description	Values
Ingress Rate Limitation	Ingress rate of the bridge port	**Disable, 256K, 512K, 1M, 2M, 3M, 3.5M, 4M, 4.5M, 5M, 8M, 10M, 16M, 20M, 25M, 32M, 40M, 50M, 64M**
Egress Rate Limitation	Egress rate of the bridge port	**Disable, 256K, 512K, 1M, 2M, 3M, 3.5M, 4M, 4.5M, 5M, 8M, 10M, 16M, 20M, 25M, 40M, 50M, 64M**
Ingress Rate Limit Type	A packet type to which the ingress rate limitation is applied	**All** – The rate limitation is applied to all arriving frames **Broadcast/Multicast/DLF** –The rate limitation is applied to broadcast, multicast and DLF frames **Broadcast/Multicast** – The rate limitation is applied to broadcast and multicast frames **Broadcast** – The rate limitation is applied to broadcast frames
Burst Size (Kbps)	Burst size of the ingress rate limitation	**2-128**

Configuring Fault Propagation

When fault propagation is on, the fault propagation mechanism notifies local and remote equipment whenever there is a faulty condition between interface groups. This enables routers and switches on both ends of the link to reroute traffic. Eth1 to Eth4 and GFP can be allocated to an interface group. You can configure each interface group to perform a specific action according to the activated fault.

➤ **To configure fault propagation:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Display the Fault Propagation menu (Configuration › Fault Propagation), see *Figure 3-25* and *Table 3-18*.
3. In the **Failed Group** field, select a group interface from the dropdown list.
4. In the **Affected Group** field, select a group interface from the dropdown list.
5. In the **Direction** field select **Unidirectional** or **Bidirectional**.
6. Click ‹**Set**› to save the configuration.

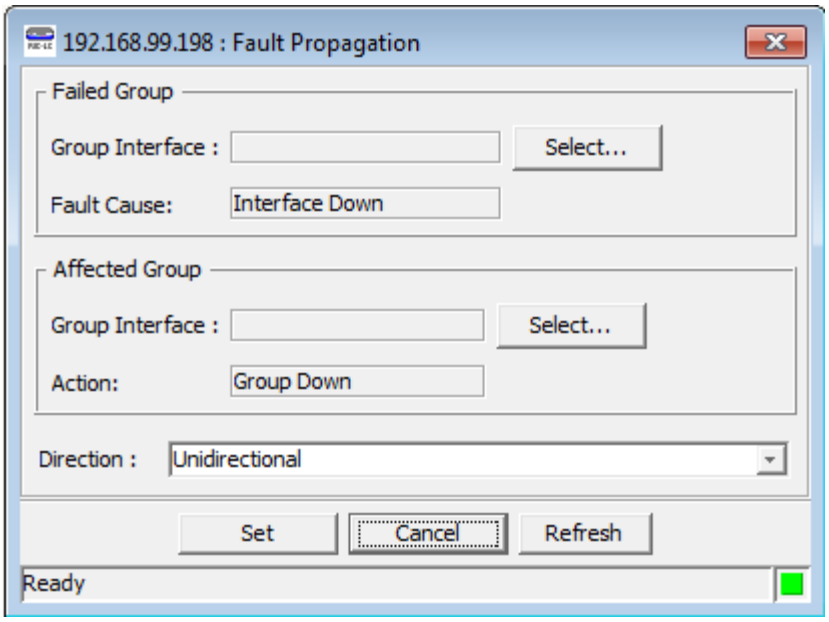


Figure 3-25. Fault Propagation screen

Table 3-18. Fault Propagation Parameters

Parameter	Description	Possible Values
Group Interfaces (Failed Group)	Interface group that initiated the fault alarm	Eth1 to Eth4, GFP LP
Group Interfaces (Affected Group)	Interface group to which the fault alarm should be forwarded	Eth1 to Eth4, GFP LP
Direction	The direction of the Alarm Forwarding	Default: **unidirectional** Bidirectional
Fault Cause	Fault on which the action should be taken	Default: **Interface Down**
Action	Action taken on affected interface	Default**: Group Down**

3.4 Additional Tasks

This section describes additional operations supported by RADview-EMS RIC-LC, as follows:

- Displaying system information
- Displaying the interface information
- Setting the date and time
- Resetting to the defaults
- Resetting the unit

Displaying the System Information

The System Information menu displays information about the current software, hardware and boot revisions of the unit. It also displays the object ID, system uptime, and the number of interfaces present in the device.

➤ **To display the system information:**

1. From the shelf view window, click on the unit to select it.
2. Display the System Information menu (Configuration › **System Info**), or click on the toolbar.

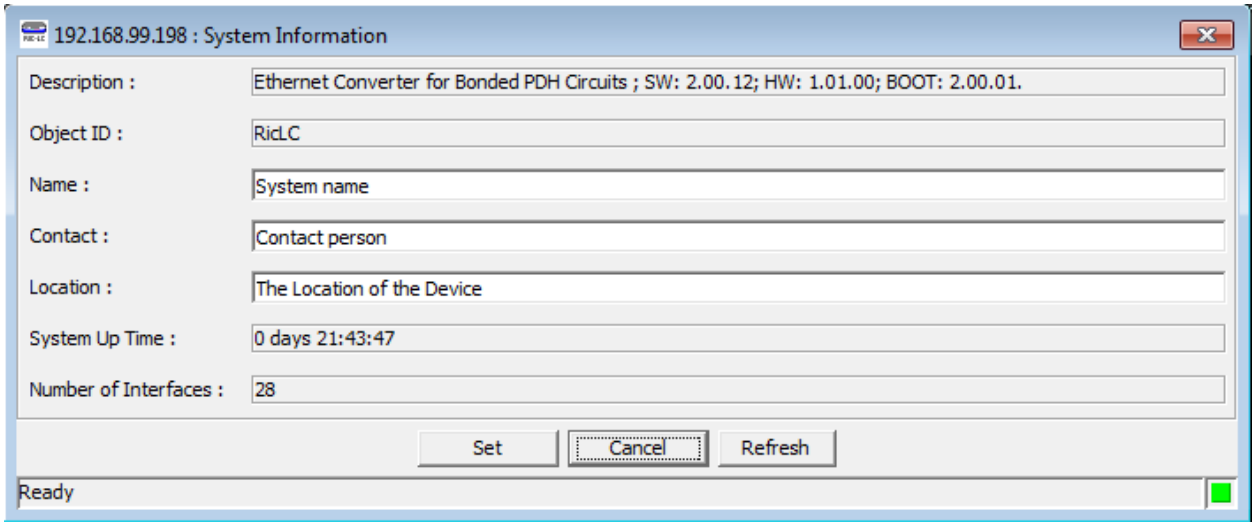


Figure 3-26. System Information (RIC-LC)

Displaying the Logical Port Information

Note *Descriptions of this section are about the device with multi-E1 ports.*

➤ **To display the logical port information:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Select the Logical Port (Configuration › **Logical Port**), and click Logical Port Status.
3. Display the Logical Port Status screen, see *Table 3-19*.

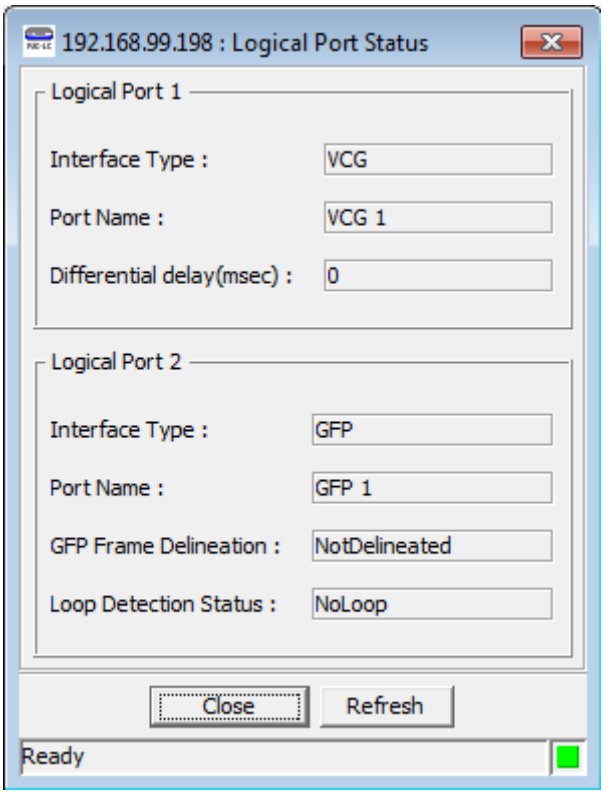


Figure 3-27. Logical Port Status

Table 3-19. Logical Port Status Parameters

Parameter	Description
Interface Type	Logical port type
Port Name	Name of the logical port
Differential Delay	Detected differential delay
GFP Frame Delineation	GFP frame delineation status
Loop Detection Status	Loop detection status

➤ **To display the LCAS members status:**

1. From the Logical Ports screen (Configuration › **Logical Port**), click LCAS Members Status.
2. Display the LCAS Members Status screen, see *Table 3-20*.

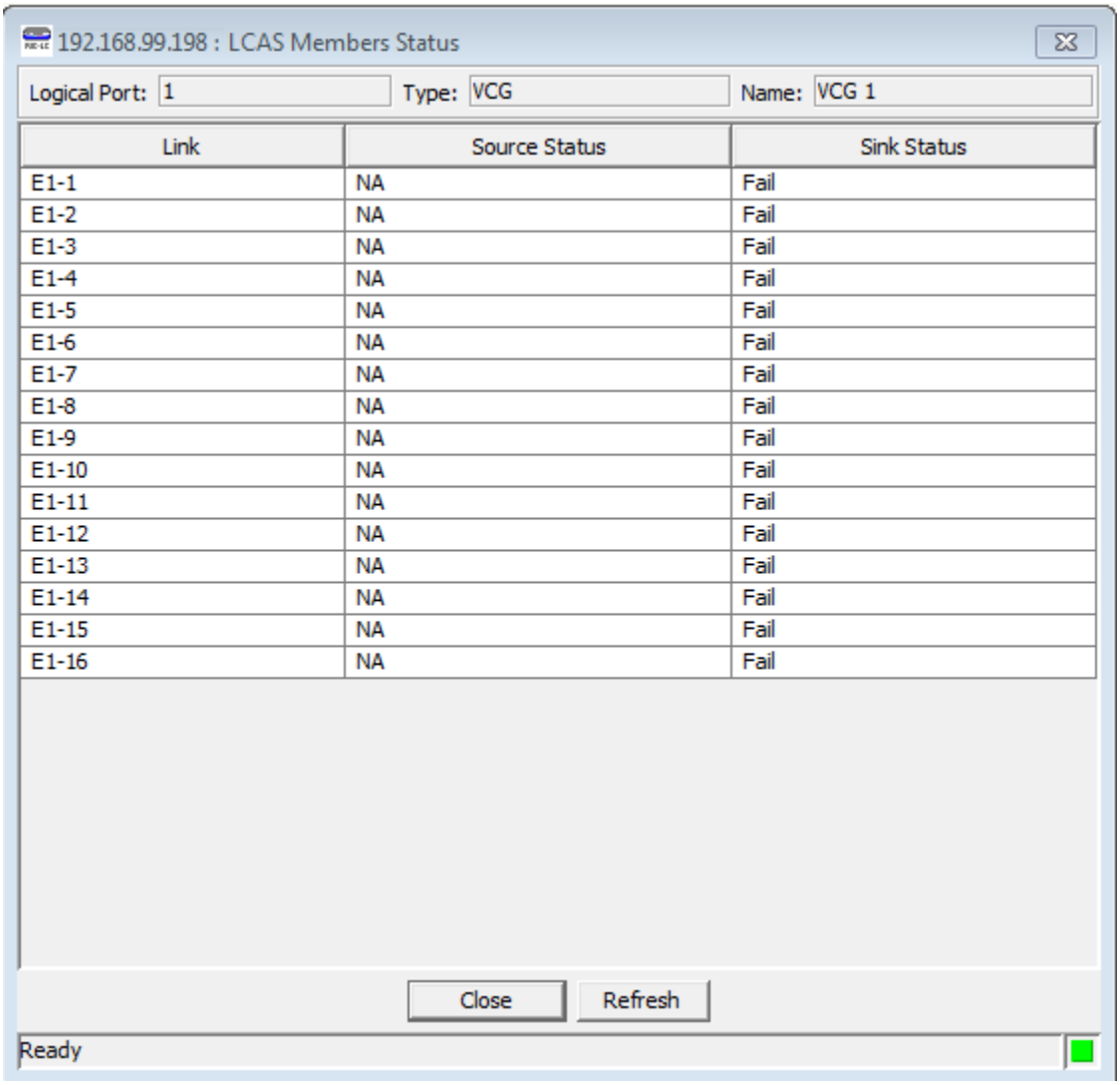


Figure 3-28. LCAS Members Status

Table 3-20. LCAS Members Status Parameters

Parameter	Description
Link	PDH link
Source Status	Status of source side of the link
Sink Status	Status of sink side of the link

Displaying the SFP Information

Note *If an RIC-LC Fast Ethernet port includes an SFP transceiver, the SFP status information is available via the SFP Info screen.*

➤ **To display the SFP information:**

1. From the shelf view window, click on an Ethernet port to select it.
2. Display the SFP Info screen (Configuration › SFP › **SFP Info**), see *Table 3-21*.

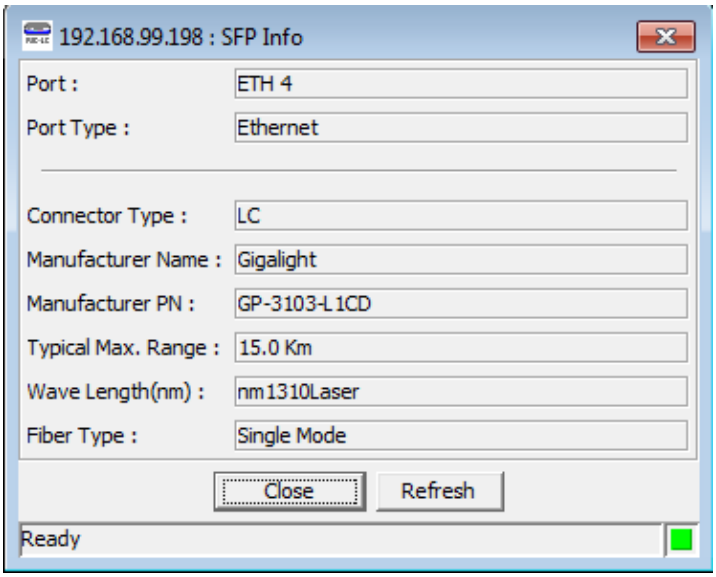


Figure 3-29. SFP Information

Table 3-21. SFP Information Parameters

Parameter	Description
Connector Type	Connector type of the SFP transceiver
Manufacturer Name	Name of the SFP manufacturer
Manufacturer PN	Manufacturer part number
Typical Max. Range	Typical maximum range of the SFP transceiver
Wave Length	Operating wavelength of the SFP transceiver
Fiber Type	Type of the fiber used by the SFP transceiver

➤ **To display the fiber port optical parameters:**

1. From the shelf view window, click on an Ethernet port to select it.
2. Display the Optical Parameters screen (Configuration › SFP › **Optical Parameters**).

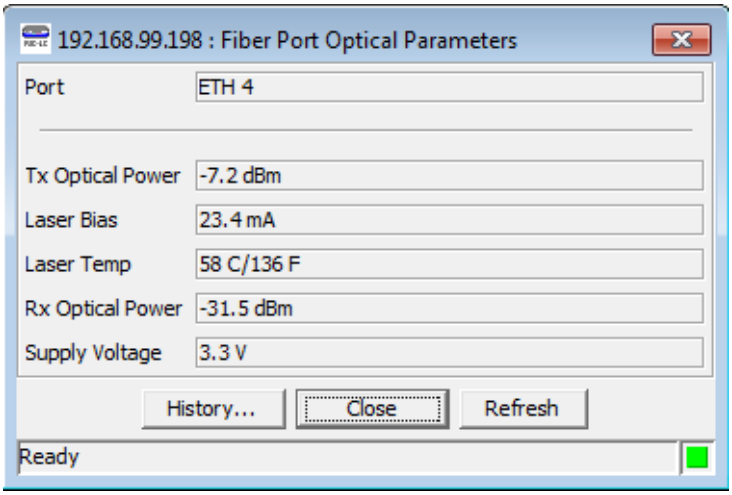


Figure 3-30. Optical Parameters

3. Click ‹**History**› to display the Fiber Port History Optical Parameters.

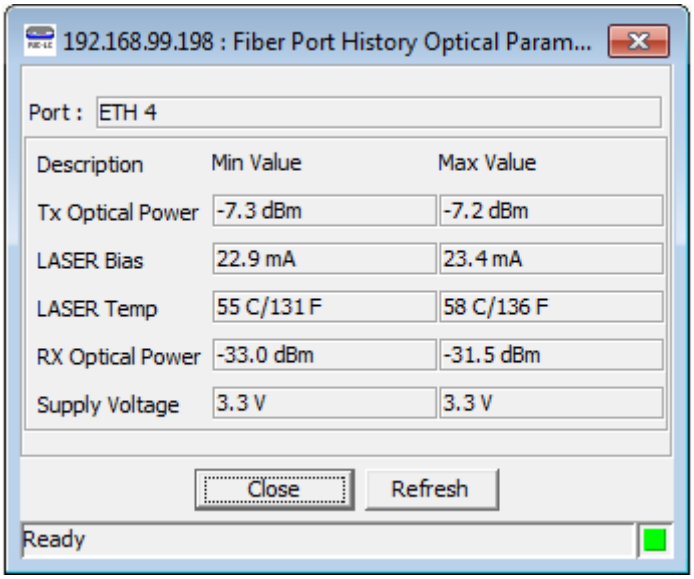


Figure 3-31. Fiber Port History Optical Parameters

Setting the Date and Time

You can set the date and time for the RIC-LC internal real-time clock.

➤ **To configure the date and time:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Display the System Time Information menu (Configuration › **Date & Time**).
3. Click on the Date drop-down menu, and select a date.
4. Click ‹**Set**› to save the changes and update RIC-LC.

   or

5. Select the NTP mode:
   - **Unicast Client –** RIC-LC sends a unicast packet to get date & time from an NTP server according to the Update Interval.
   - **Manual –** RIC-LC receives date and time from an NTP server when a user manually performs a Send Update Request Once command.
6. Select **GMT Region**.
7. Select **Update Interval**.

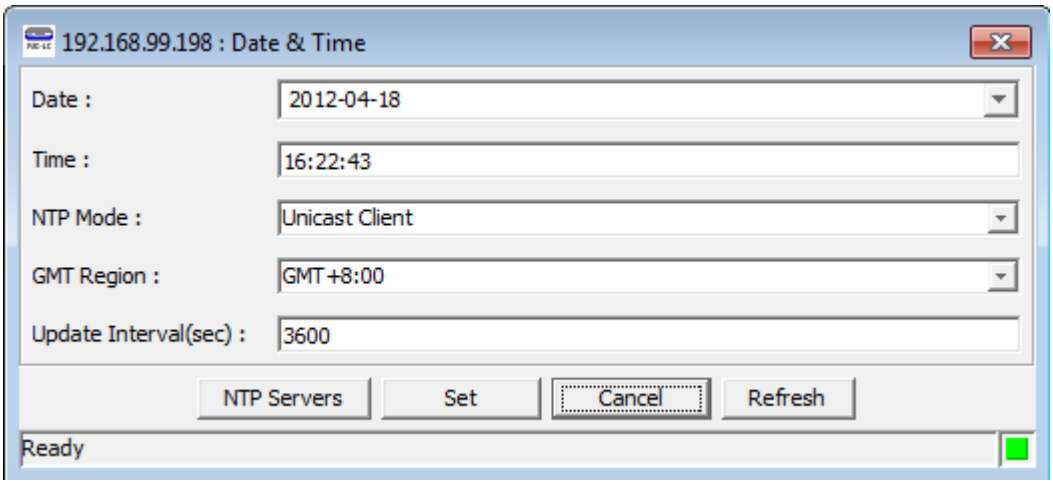


Figure 3-32. Date & Time Information

8. Click on NTP Servers button to display the NTP servers menu.
9. Select an NTP server and click ‹**Change**›.
   The Set NTP Server dialog box is displayed.
10. Set NTP Server Address, Admin Status, and UDP Port.
11. Click ‹**Set**› to save the changes.
12. Click ‹**Send Update Request Once**› to get the time from NTP server and update RIC-LC.

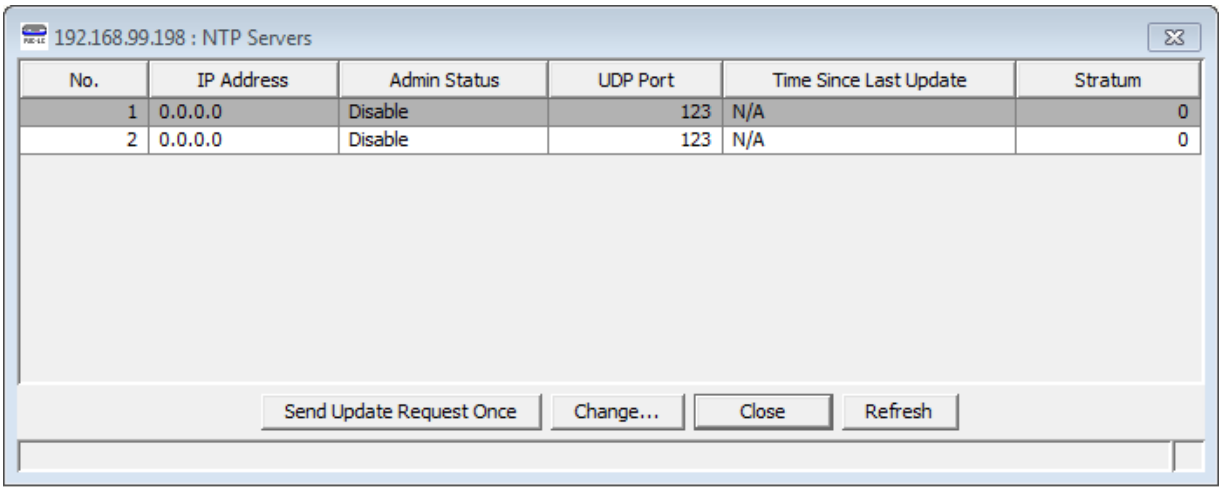


Figure 3-33. NTP Servers Information

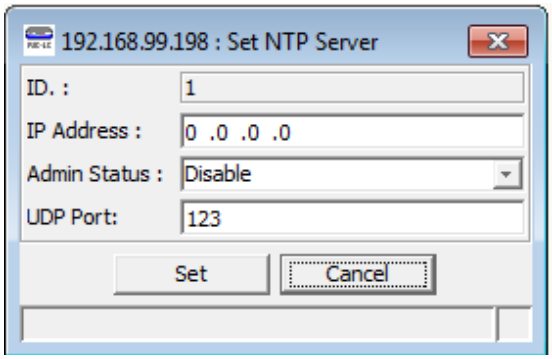


Figure 3-34. Set NTP Server

Table 3-22. Time and Date Parameters

Parameter	Description	Values
Date	Current system time entered manually or received from an NTP server in the yyyy:mm:dd format	
Time	Current system date entered manually or received from an NTP server in the hh:mm:ss format	
NTP Mode	Controls request timing messages from NTP server on certain interval or manual request	**Unicast Client, Manual**
GMT Region	Defines offset of NTP or RTC from UTC in hours	**GMT -12 to +13**
Update Interval(sec)	Defines time between two consecutive NTP requests when NTP Mode is Unicast Client	**15–3600**
NTP Servers	Configures unicast NTP server(s)	
IP Adress	Configures unicast NTP server IP	**IP adress**
Admin Status	Administrative status of the NTP server. IPmux-2L sends time/date requests to an enabled NTP server.	**Enable** – NTP Server is enabled **Disable** – NTP Server is disabled
UDP Port	Source UDP port of NTP packets sent to the configured server	**1–65535**

Resetting to the Defaults

You can reset RIC-LC to its default settings. In addition, you can reset a local RIC-LC without affecting its management parameters (host IP address, mask and default gateway, defined network managers, and management access methods).

➤ **To reset RIC-LC to the default settings:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Select Configuration › System Commands › **Reset Configuration** or click on the toolbar.

   A confirmation message appears.

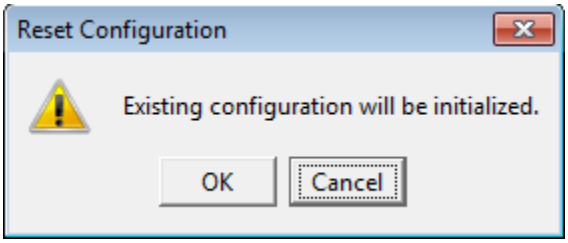


Figure 3-35. Confirmation Message for Resetting to Defaults

3. Click **<OK>** to confirm the reset.

Resetting RIC-LC

You can perform an overall reset of RIC-LC. The reset does not affect the unit configuration.

➤ **To reset RIC-LC:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Select Configuration › System Commands › **Reboot Agent**.

   A confirmation message appears.

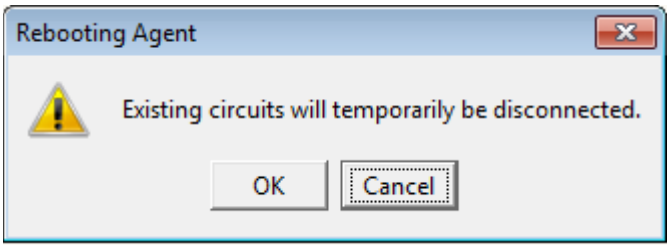


Figure 3-36. Confirmation Message for Unit Reset

3. Click **<OK>** to confirm the reset.

Chapter 4

Performance Management

4.1 Introduction

This chapter explains how to monitor the RIC-LC performance and to collect statistics of performance data.

The tasks presented in this chapter include:

- *Controlling Polling for Statistics Data*
- *Displaying GFP Statistics*
- *Displaying E1 Statistics*
- *Displaying Ethernet Interface Statistics*

4.2 Controlling Polling for Statistics Data

The polling interval determines the intervals at which the RADview-EMS polls the managed RIC-LC for performance monitoring data. This enables refreshing of the displayed statistics at intervals appropriate to your specific requirements.

Selecting a smaller polling interval increases the polling frequency, and thus increases the management traffic load and the size of the statistics files stored on the station disk.

Changing the polling interval immediately modifies the rate of collection of all the statistics, for all the ports, but does not affect data collected for previous intervals.

➤ **To control the polling for statistics data:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Select Statistics > **Polling Interval**.

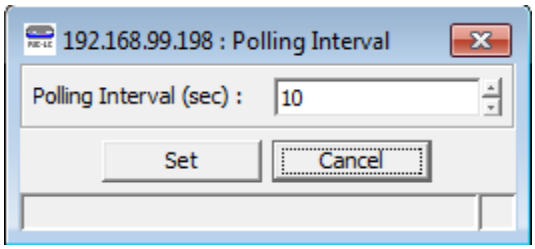


Figure 4-1. Polling Interval Dialog Box

3. To select the polling interval, use the arrows on the Polling Interval box, or type the desired value. The polling interval can be defined in 5-second increments, in the range of 5 to 60 seconds. The default value is 10 seconds.

➤ **To initiate polling sequence:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Select Configuration › System Commands › **Poll Agent** or click on the toolbar.

   RADview-EMS polls RIC-LC.

4.3 Displaying GFP Statistics

You can display the statistics for the GFP logical ports.

➤ **To display GFP statistics:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Select Statistics› **GFP**.

   The logical layer statistics are displayed. See *Table 4-1* for details.
3. To update the display, click ‹**Poll**›.
4. Click **Reset Counters** to reset the counters.
5. When done, click ‹**Close**›.

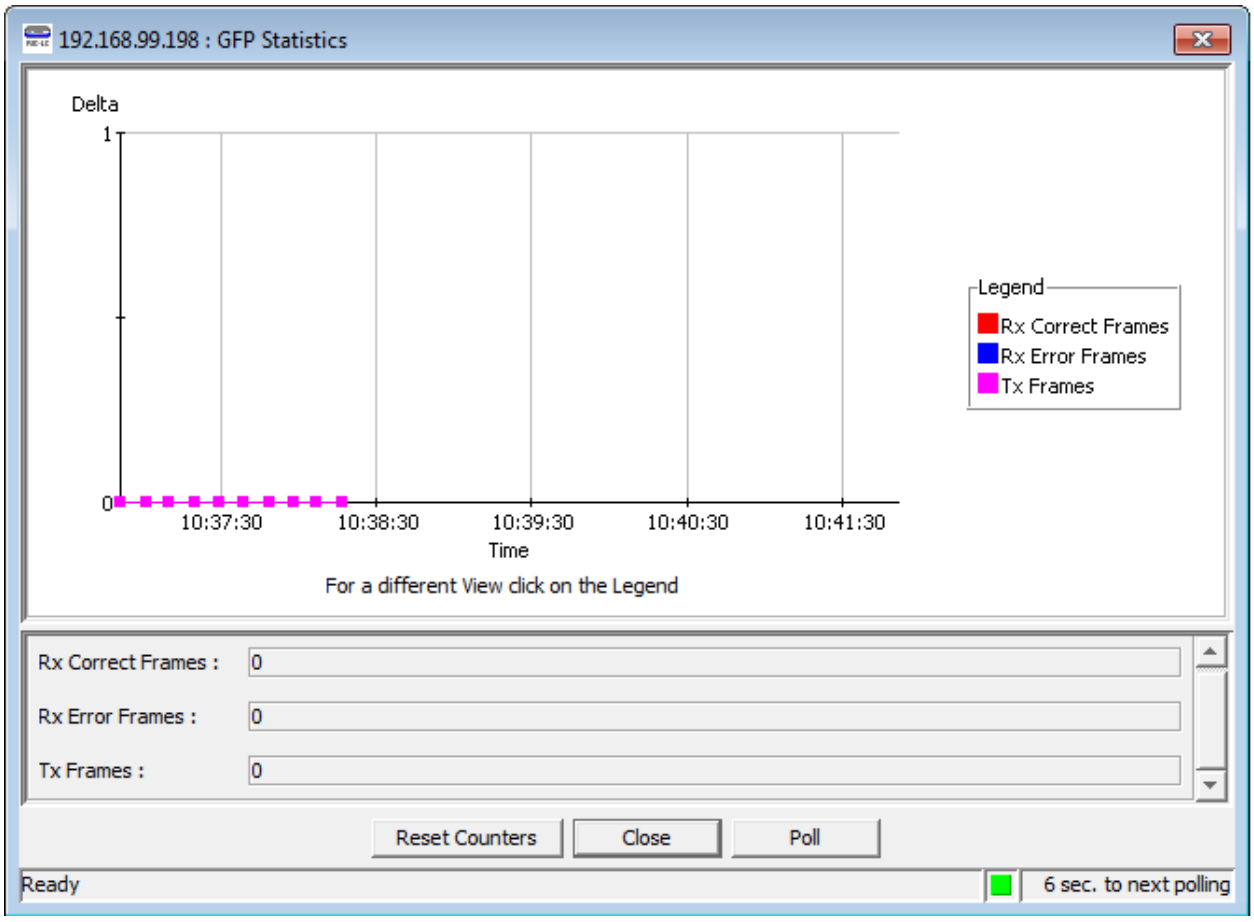


Figure 4-2. Logical Layer Statistics (GFP)

Table 4-1. Logical Layer Statistics

Parameter	Description
RX Correct Frames	Total number of frames received
RX Error Frames	Total number of FCS error, oversize or undersize frames received
TX Frames	Total number of frames transmitted

4.4 Displaying E1 Statistics

RADview-EMS can display both current and interval E1 statistics. The statistics are displayed in both table and graph formats. This information is useful for assessing quality of service, for network troubleshooting, and for planning purposes.

Displaying Current E1 Interface Statistics

The current E1 statistics are displayed for the current 15-minute interval.

➤ **To display current E1 statistics:**

1. From the shelf view window, click on an E1 port to select it.
2. Display the Port Current Statistics screen (Statistics › Current), see *Table 4-2*.
3. To update the display, click ‹**Poll**›.
4. When done, click ‹**Close**›.

Note *The display is automatically updated after each polling. The time remaining until the next polling is indicated at the lower right-hand corner of the display.*

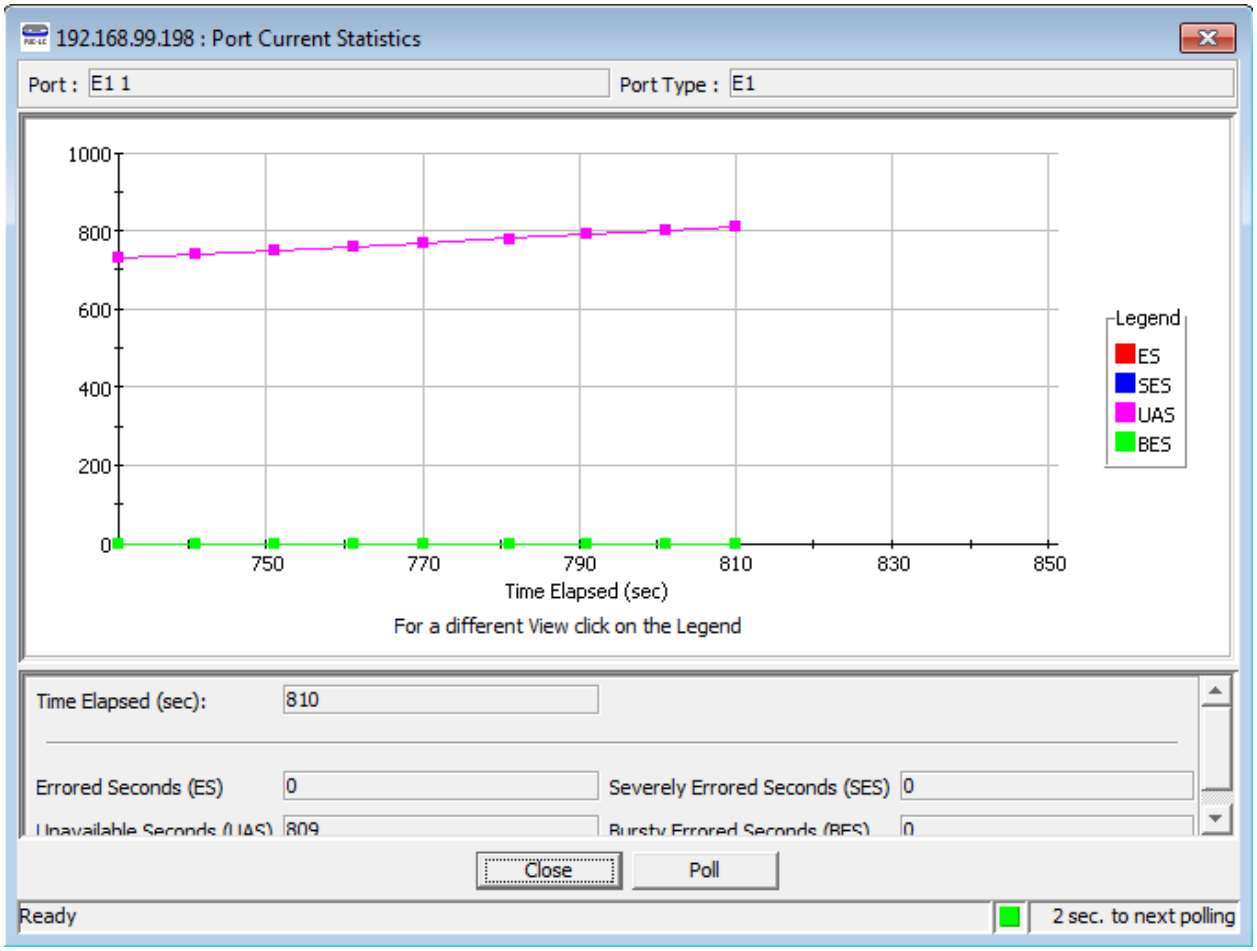


Figure 4-3. E1 Port Current Statistics

Table 4-2. Current E1 Port Statistics Parameters

Parameter	Description
Port	The number of the selected port
Port Type	Port type
Time Elapsed (sec)	The elapsed time (in seconds) since the beginning of the current interval, in seconds. The range is 1 to 900 seconds
ES	Number of errored seconds
SES	Number of severely errored seconds

Parameter	Description
UAS	Number of unavailable seconds
BES	Number of burstly errored seconds

Displaying Interval E1 Interface Statistics

The interval E1 statistics are displayed for the last 24 hours (96 15-minute intervals).

➤ **To display interval E1 statistics:**

1. From the shelf view window, click on an E1 port to select it.
2. Display the Port Intervals Statistics screen (Statistics › Intervals).
3. When done, click ‹**Close**›.

The parameters displayed on the Port Intervals Statistics menu are similar to those for the current interval (described in *Table 4-2*) of the selected port, except for the following additional parameters:

- Number of Intervals – displays the number of intervals (up to 96) for which performance monitoring statistics can be displayed
- Inv No. – displays the 15-minute interval number
- From (hh:mm) – displays the start time of the 15-minute interval
- To (hh:mm) – displays the end time of the 15-minute interval.

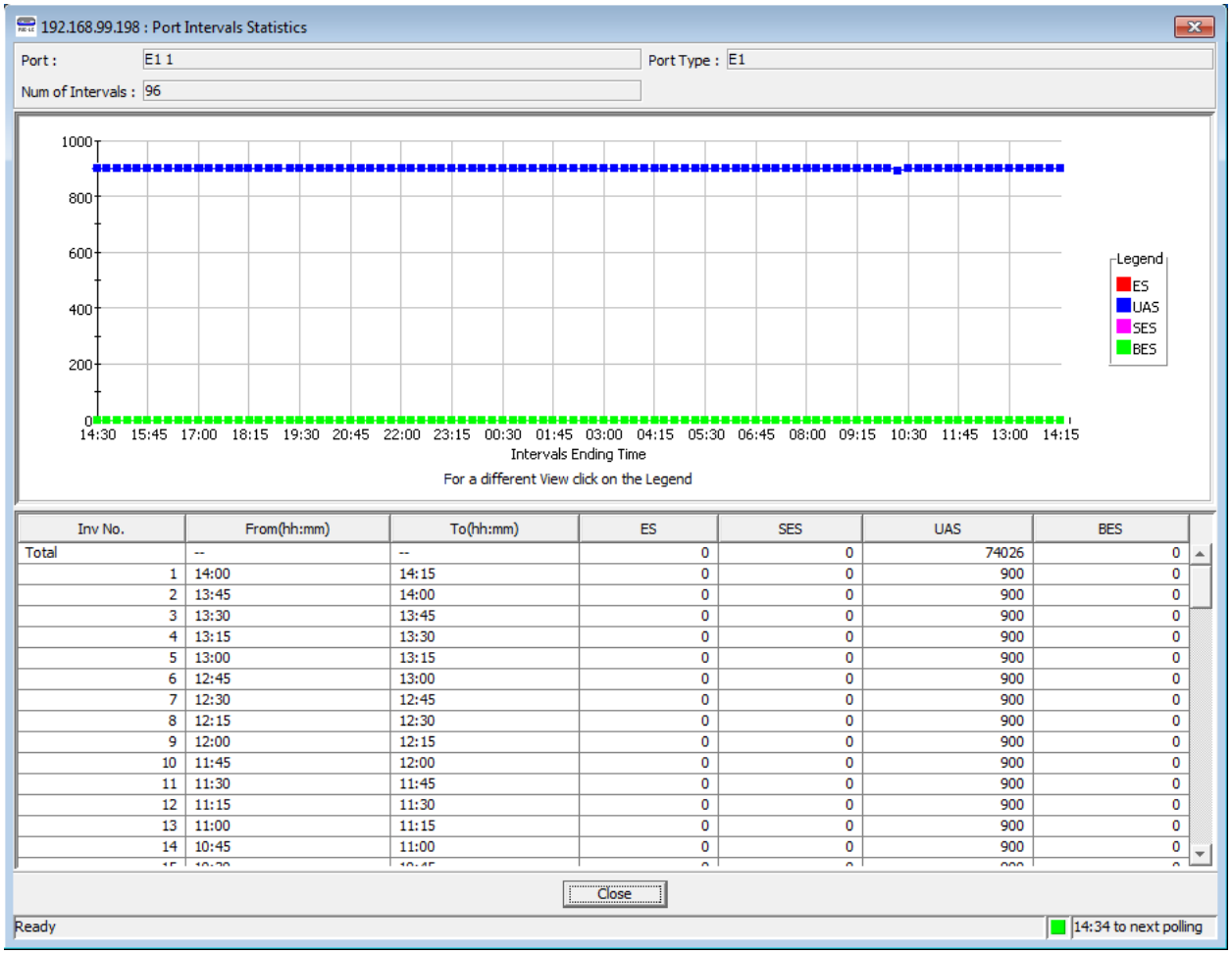


Figure 4-4. E1 Port Interval Statistics

4.5 Displaying Ethernet Interface Statistics

The Ethernet Interface Statistics command enables you to view statistics for the selected Ethernet port. The aggregate statistics for the port are displayed in a dialog box. This information is useful for assessing quality of service, for network troubleshooting and planning purposes.

➤ **To display Ethernet interface statistics:**

1. From the shelf view window, click on an Ethernet port to select it.
2. Display the Interface Statistics screen (Statistics › Interface Statistics), see *Table 4-3*.
3. To update the display, click ‹**Poll**›.
4. Click **Reset Counters** to reset the counters.
5. When done, click ‹**Close**›.

Note

The display is automatically updated after each polling. The time remaining until the next polling is indicated at the lower right-hand corner of the display.

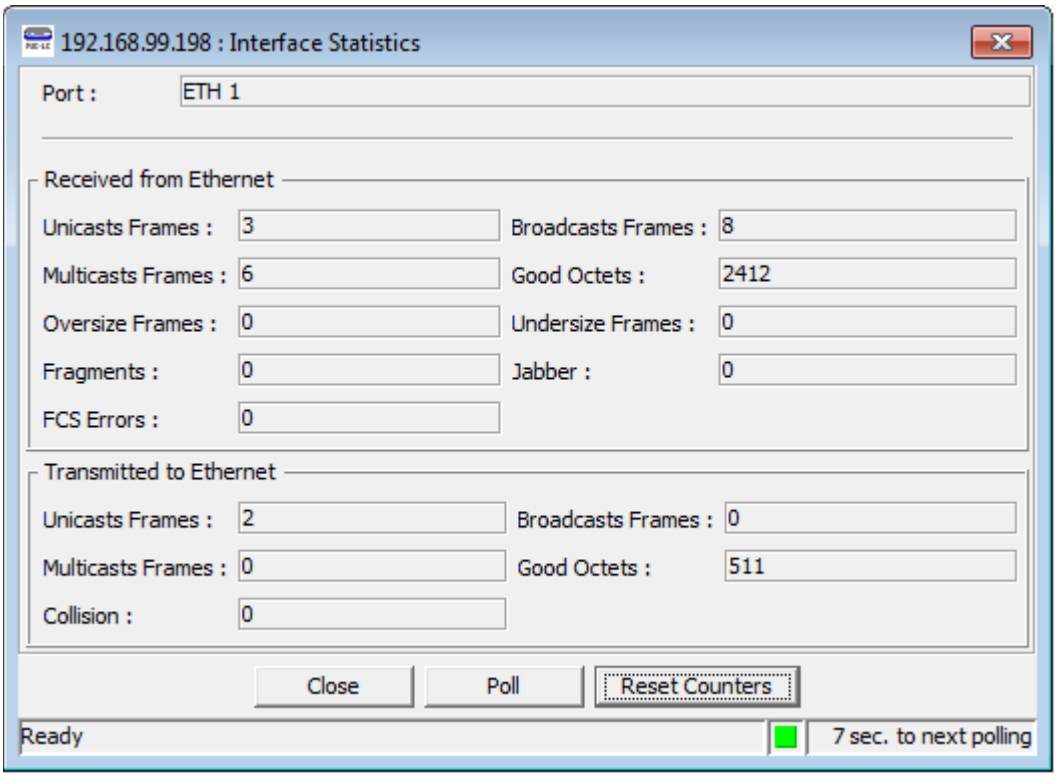


Figure 4-5. Ethernet Interface Statistics

Table 4-3. Ethernet Interface Statistics Parameters

Type	Parameter	Description
	Port	The number of the selected port
Received from Ethernet	Unicasts Frames	Number of correct unicast frames received
	Broadcasts Frames	Number of correct broadcast frames received
	MulticastS Frames	Number of correct multicast frames received
	Good Octets	Total number of octets (bytes) received. When a valid connection is established, the number should increase steadily.
	Oversize Frames	Number of frames exceeding the maximum allowed frame size 2048 octets, but are otherwise valid Ethernet frames (good CRC)
	Undersize Frames	Number of frames received that were less than 64 octets long, but are otherwise valid Ethernet frames (good CRC)
	Fragments	Number of frames that are shorter than 64 bytes and have an invalid CRC
	Jabber	Number of frames that are too long and have an invalid CRC
	FCS Errors	Number of FCS error
Transmitted to Ethernet	Unicasts Frames	Number of correct unicast frames transmitted
	Broadcasts Frames	Number of correct broadcast frames transmitted
	Multicasts Frames	Number of correct multicast frames transmitted

Type	Parameter	Description
	Good Octets	Number of octets successfully transmitted. When a valid connection is established the number should increase steadily.
	Collision	Number of successfully transmitted frames whose transmission is inhibited by a collision event

Chapter 5

Security Management

5.1 RADview-EMS User Security Levels

User management is a basic security feature of RADview-EMS. The user security levels are managed by RADview-EMS Security Console. The EMS Security Console is a tool that enables users with security administrative rights to do the following:

- View and manage the EMS Security profiles in a graphical interface
- Create and edit security profiles
- Manage user accounts.

For details, refer to the RADview-EMS User's Manual.

The followingsections present an overview of the four user security levels: Monitor, Technician, Operator, and Administrator.

Monitor

A user at the Monitor level can monitor all types of information related to the managed device, but cannot perform any action that causes a change in the device. This means that any action requiring the use of Set, Apply, Delete, Change, Add, Remove, and similar operations, either within a dialog box or by selecting a menu option, is prevented in either of following ways:

- To view additional information, the Monitor can modify fields in a dialog box, but cannot activate the changes because the Set, Apply, Delete, Change, Add, Remove, and similar operations are blocked. Any attempt to activate a change will be denied, and the Monitor will be notified.
- Some dialog boxes do not provide any additional information, but merely allow changes in the system. Since a Monitor cannot use these dialog boxes, they are not displayed at this level.

Technician

The Technician level is granted all the permissions of the Monitor level, and in addition is allowed to perform port tests.

The response to actions beyond the level of Technician permissions are handled in the same manner as for the Monitor level.

Operator and Administrator Levels

The Operator is granted all the permissions needed to perform any task related to RIC-LC management.

The Administrator has all the Operator permissions, and access to the RADview-EMS User Manager function, which is not accessible by the Operator.

5.2 Adding Users

➤ **To add a user:**

1. From the EMS Security Administrator window, select **User** › **Add...**.

   The Add User dialog box is displayed (see *Figure 5-1*).

2. Enter the User Name and Description.
3. Select **Profile** (from one of the existing profiles).
4. Enter the user **Password**.
5. Enter the user password again to **Confirm Password**.
6. Click ‹**Set**›.

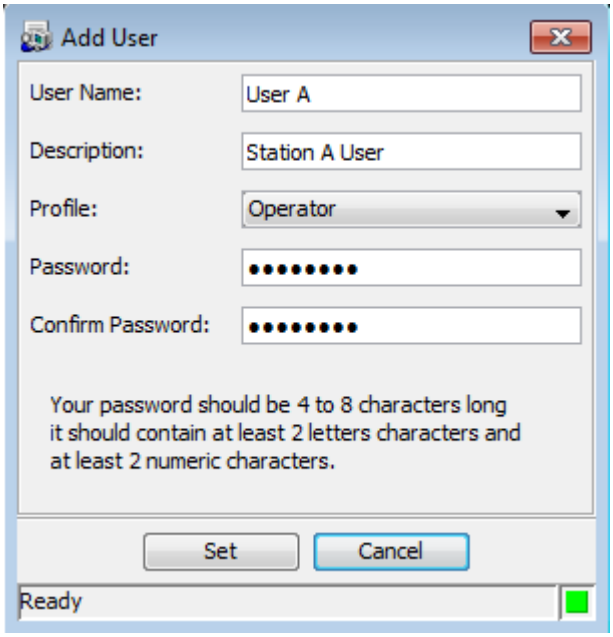


Figure 5-1. Add User Dialog Box

5.3 Changing User Names

➤ **To change a user:**

1. In the EMS Security Administrator window, select **User** › **Edit...**.

   The Edit User dialog box is displayed (see *Figure 5-2*).

2. If necessary, make changes to **User Name, Description**, **Profile**, or **Lock**.
3. Click ‹**Set**›.

Note *You cannot edit your own User properties.*

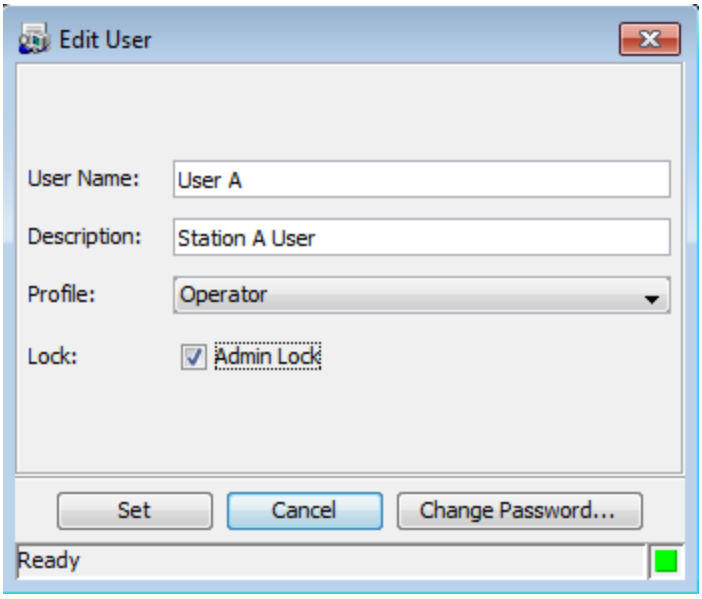


Figure 5-2. Edit User Dialog Box

Note

- *This entry is enabled only when an entry in the Users Table is selected.*
- *When **Admin Lock** is selected, the user cannot use the system until the Administrator clears **Admin Lock**.*

5.4 Changing Passwords

➤ **To change a user password:**

1. In the EMS Security Administrator window, select **User** › **Edit...**.

   The Edit User dialog box is displayed (see *Figure 5-2*).

2. Click ‹**Change Password**›.

   The Change Password dialog box is displayed (*Figure 5-3*).

3. Enter the new **Password**.
4. Enter the new password again to **Confirm Password**.
5. Click ‹**Set**›.

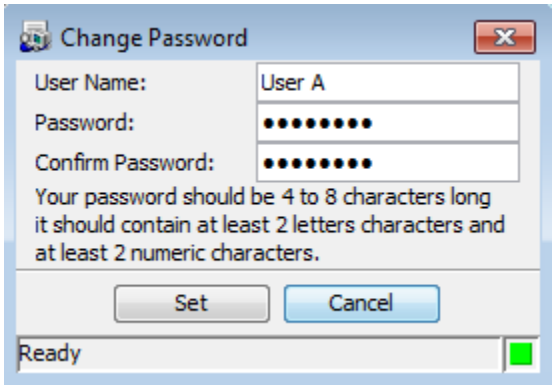


Figure 5-3. Change Password Dialog Box

5.5 Removing Users

➤ **To remove a user:**

1. In the EMS Security Administrator window, select **User** › **Remove**.

   The Confirm User Removal dialog box is displayed (see *Figure 5-4*).

2. Click ‹**OK**›.

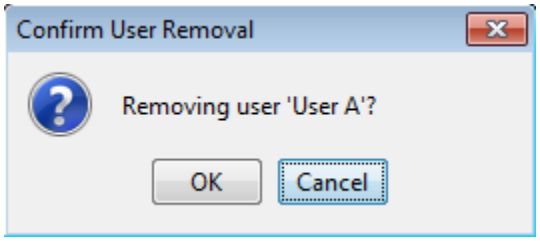


Figure 5-4. Confirm User Removal Confirmation Box

5.6 Viewing and Setting Access Options

RADview-EMS allows you to view and modify the authorizations for management access to an RIC-LC unit by means of Telnet and Web browsers.

Access by means of the supervision terminal is always available, and SNMP access cannot be disabled by SNMP commands (not even by commands from the RADview-EMS).

➤ **To view or modify the Telnet and Web browser access options:**

1. From the zoom application window, click on the RIC-LC unit to select it.
2. From the Access menu (Options › Access), and select the desired option:
   - **Disable** – access by Telnet and Web browsers is blocked. This overrides the access rights of any user that may be logged on RIC-LC. Note that activating this selection disconnects the currently logged on users.
   - **Enable** – access is allowed to any logged user.

- **Managers Only** – access by Telnet and Web browsers is allowed only to the management stations configured by means of the Manager List (Options › Manager List).

Note *Activating this option may also disconnect currently logged users.*

3. Click **‹Set›** to save the new configuration.

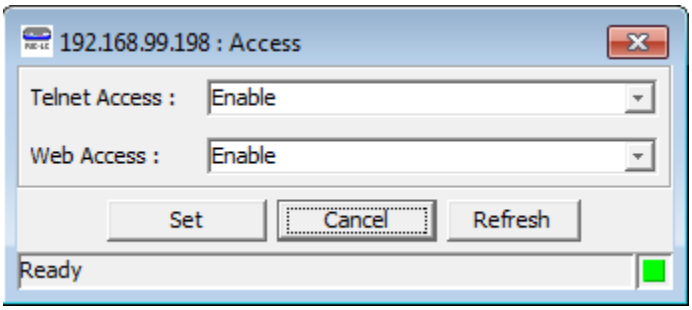


Figure 5-5. Access Menu

Chapter 6

Fault Management

This chapter provides instructions for performing RIC-LC fault management tasks by means of the RADview-EMS. These tasks include:

- *Handling Alarms and Traps*
- *Running Diagnostic Tests*

6.1 Handling Alarms and Traps

RIC-LC continuously monitors critical signals and signal processing functions. Whenever a problem is detected, RIC-LC generates a time-stamped alarm message for the event. The time stamp is provided by an internal real-time clock, which can be synchronized with the management station clock using Configuration› **Date & Time**.

RADview-EMS displays:

- The currently active alarms reported by RIC-LC
- The log of all RIC-LC alarms that are stored in the alarm buffer

Various diagnostic tests can be used to determine the causes of the alarm messages.

For continuous monitoring, detected alarms can also be sent automatically as traps to the user-specified managers. (The managers are configured using Options › **Manager List.**)

Viewing Device Status

Each level and node icon in the navigation tree and the map area has a status icon that indicates the most severe alarm, as specified in the following table.

Table 6-1. Network Element Repository Status Icons- Unix

Icon	Color	Status
	Green	Normal
	Blue	Warning
	Dark yellow	Minor
	Orange	Major
	Red	Critical

Icon	Color	Status
	Red	Disconnected
	Gray	Administrative status is set to down
	Gray	Unknown node type

Table 6-2. Network Element Repository Status Icons- PC

Icon	Color	Status
	Green	Normal
	Blue	Warning
	Dark yellow	Minor
	Orange	Major
	Red	Critical
	Red	Disconnected
	Gray	Administrative status is set to down
	Gray	Unknown node type

Displaying Active Alarms

RV-EMS allows you to view all the currently-active alarms reported by RIC-LC, at both the system and port level.

Note

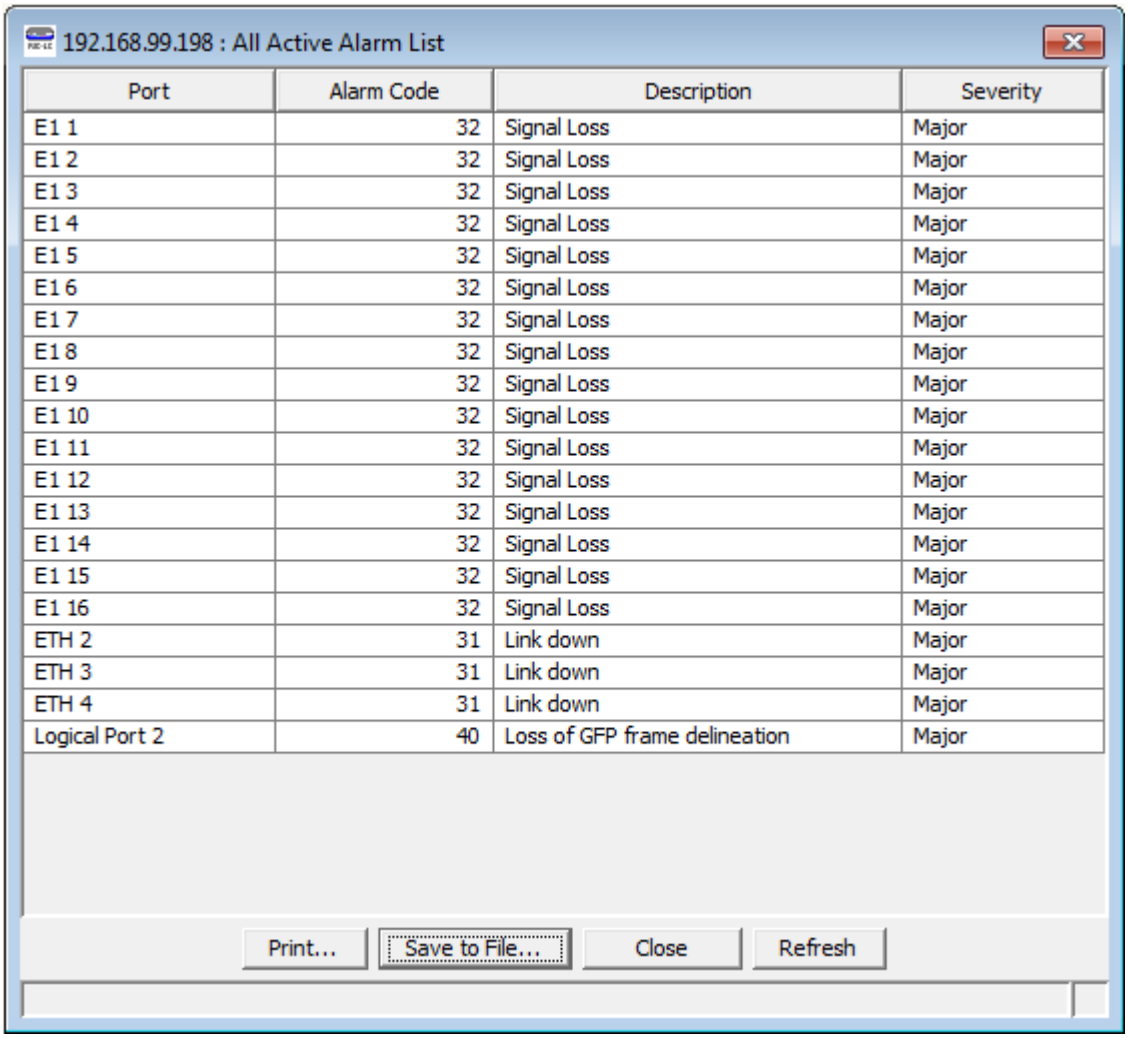
This function can be accessed by all RV-EMS users, including users with Monitor or Technician permission.

Viewing all Active Alarms

➤ **To view all active alarms:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Select Fault› Alarms› **All**.

   The All Active Alarms List is displayed (*Figure 6-1*).
3. If the list is not empty, you have the following options:
   - Print the alarm list: click **‹Print›**.
   - Save the alarm list as a Comma Separated Values file (extension **.csv**): click **‹Save to File›**.
4. To refresh the list, click **‹Refresh›**.



Port	Alarm Code	Description	Severity
E1 1	32	Signal Loss	Major
E1 2	32	Signal Loss	Major
E1 3	32	Signal Loss	Major
E1 4	32	Signal Loss	Major
E1 5	32	Signal Loss	Major
E1 6	32	Signal Loss	Major
E1 7	32	Signal Loss	Major
E1 8	32	Signal Loss	Major
E1 9	32	Signal Loss	Major
E1 10	32	Signal Loss	Major
E1 11	32	Signal Loss	Major
E1 12	32	Signal Loss	Major
E1 13	32	Signal Loss	Major
E1 14	32	Signal Loss	Major
E1 15	32	Signal Loss	Major
E1 16	32	Signal Loss	Major
ETH 2	31	Link down	Major
ETH 3	31	Link down	Major
ETH 4	31	Link down	Major
Logical Port 2	40	Loss of GFP frame delineation	Major

Figure 6-1. All Active Alarm List

Table 6-3. All Active Alarm List Parameters

Parameter	Description
Port	Port of alarm origin
Alarm Code	The alarm or event identification code
Description	Text string that provides a concise description of the alarm condition or event
Severity	The severity of the alarm: Warning, Event, Minor, Major, Critical

Viewing all System Alarms

➤ **To view system alarms:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Select Fault › Alarms › **System Level**.

   The System Level Active Alarms List is displayed (*Figure 6-2*).
3. If the list is not empty, you have the following options:
   - Print the alarm list: click **‹Print›**.

- Save the alarm list as a Comma Separated Values file (extension **.csv**): click **<Save to File>**.

4. To refresh the list, click **<Refresh>**.

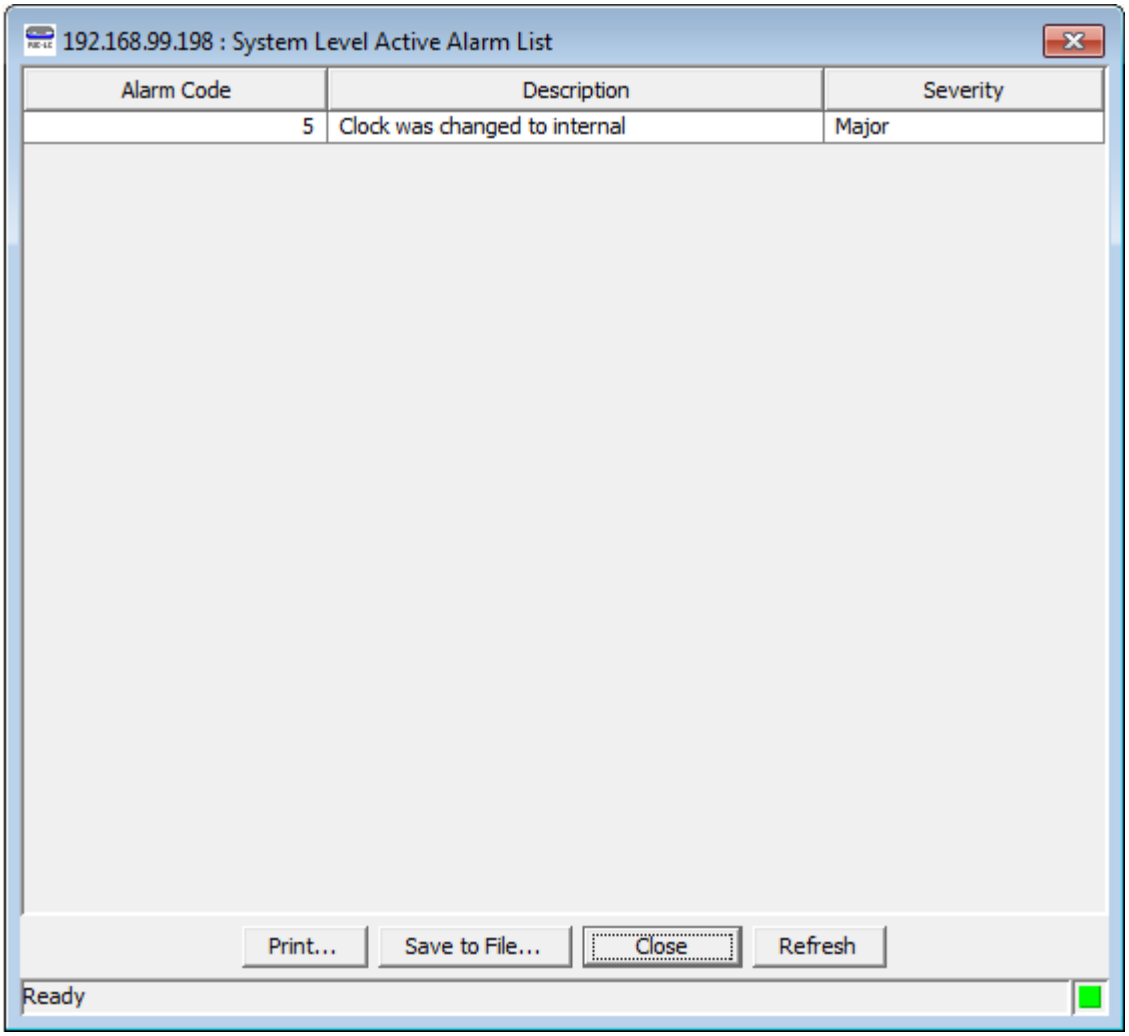


Figure 6-2. System Level Active Alarm List

Viewing Port Alarms

➤ **To view port alarms:**

1. From the shelf view window, click on an RIC-LC E1 or FE port to select it.
2. Select Fault › Alarms › **Alarms**.

   The Port Active Alarms List is displayed (*Figure 6-3*).
3. If the list is not empty, you have the following options:
   - Print the alarm list: click **<Print>**.
   - Save the alarm list as a Comma Separated Values file (extension **.csv**): click **<Save to File>**.
4. To refresh the list, click **<Refresh>**.

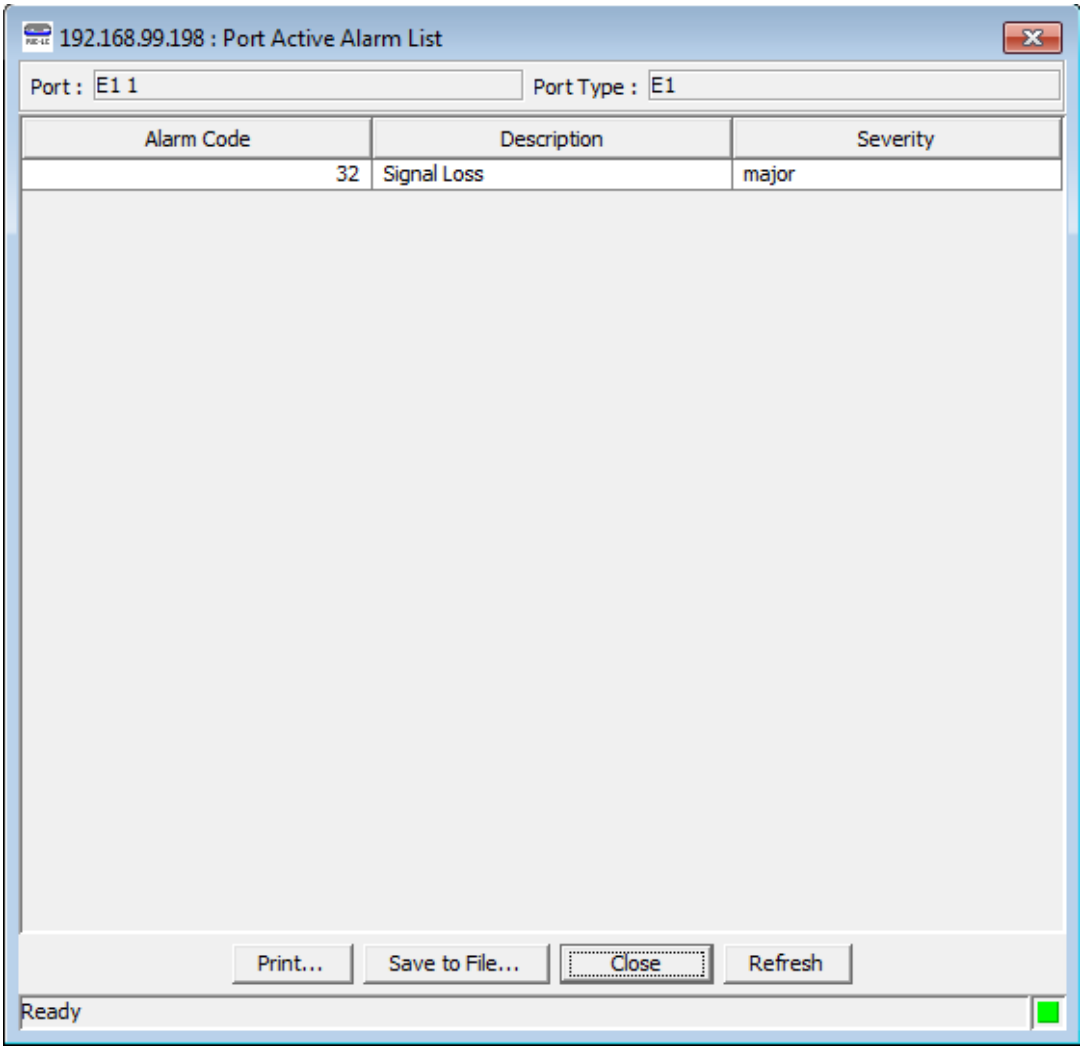


Figure 6-3. E1 Port Active Alarm List

Displaying History Log

The history log records the details of all events. The history log file dialog box displays 256 log entries per page, and the buffer itself can hold up to 2048 log entries.

Setting the RIC-LC device to its default configuration or resetting the RIC-LC clears the history log.

➤ **To display the history log:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Select Fault › History Log › **List**.

   The History Log is displayed (*Figure 6-4*).
3. If the log is not empty, you have the following options:
   - Print the alarm list: click **‹Print›**
   - Save the alarm list as a Comma Separated Values file (extension **.csv**): click **‹Save to File›**

- Display the next page: click **<Next>**
- Display alarms starting from a selected number: click **<Start From>** and enter a starting alarm index number

4. To refresh the list, click **<Refresh>.**

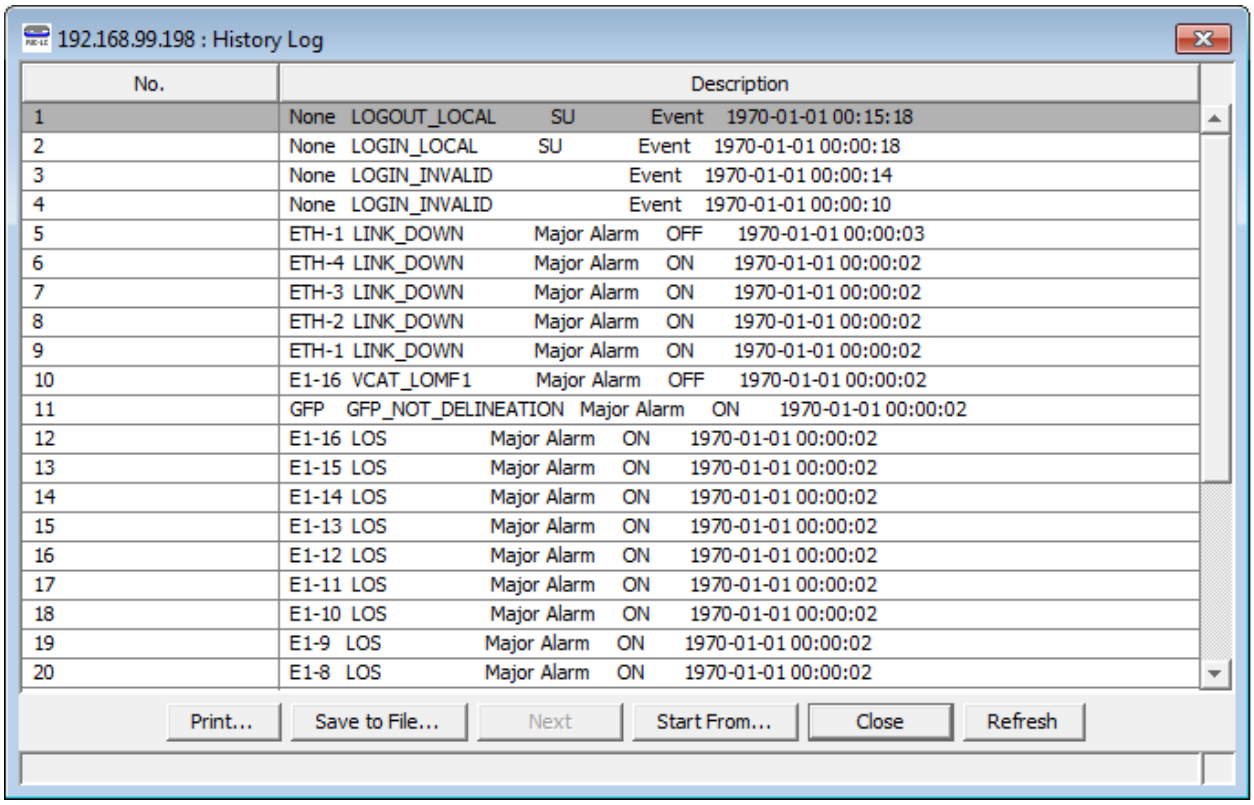

192.168.99.198 : History Log
No.
Description
1 None LOGOUT_LOCAL SU Event 1970-01-01 00:15:18
2 None LOGIN_LOCAL SU Event 1970-01-01 00:00:18
3 None LOGIN_INVALID Event 1970-01-01 00:00:14
4 None LOGIN_INVALID Event 1970-01-01 00:00:10
5 ETH-1 LINK_DOWN Major Alarm OFF 1970-01-01 00:00:03
6 ETH-4 LINK_DOWN Major Alarm ON 1970-01-01 00:00:02
7 ETH-3 LINK_DOWN Major Alarm ON 1970-01-01 00:00:02
8 ETH-2 LINK_DOWN Major Alarm ON 1970-01-01 00:00:02
9 ETH-1 LINK_DOWN Major Alarm ON 1970-01-01 00:00:02
10 E1-16 VCAT_LOMF1 Major Alarm OFF 1970-01-01 00:00:02
11 GFP GFP_NOT_DELINEATION Major Alarm ON 1970-01-01 00:00:02
12 E1-16 LOS Major Alarm ON 1970-01-01 00:00:02
13 E1-15 LOS Major Alarm ON 1970-01-01 00:00:02
14 E1-14 LOS Major Alarm ON 1970-01-01 00:00:02
15 E1-13 LOS Major Alarm ON 1970-01-01 00:00:02
16 E1-12 LOS Major Alarm ON 1970-01-01 00:00:02
17 E1-11 LOS Major Alarm ON 1970-01-01 00:00:02
18 E1-10 LOS Major Alarm ON 1970-01-01 00:00:02
19 E1-9 LOS Major Alarm ON 1970-01-01 00:00:02
20 E1-8 LOS Major Alarm ON 1970-01-01 00:00:02
Print...
Save to File...
Next
Start From...
Close
Refresh

Figure 6-4. Alarm History Log

Clearing History Log

You can delete all entries from the alarm history log.

➤ **To clear the history log:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Select Fault › History Log › **Clear**.

   The Clearing Log Buffer confirmation message is displayed.

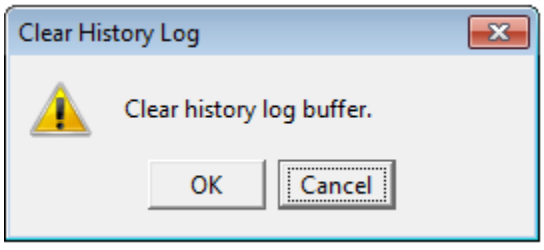


Figure 6-5. Clearing Log Buffer Confirmation Message

3. Click **<OK>** to confirm the deletion.

Masking Alarms

RIC-LC system and port alarm traps can be masked.

➤ **To mask an alarm:**

1. From the shelf view window, click on the RIC-LC unit to select it.
2. Select Fault › Alarm Mask.

   The Alarm Mask menu is displayed (*Figure 6-6* and *Figure 6-7*).
3. From the Alarm Mask menu, define the masking:
   - **Level** –Level of the alarms to mask (System or Port)
   - **Port Type** –Type of the port to mask (Ethernet Port, E1 Port, VCG Port, GFP Port)
   - **Port** – A specific port to mask
4. Click ‹**Filter**› to apply your selection.
5. Select the alarms to mask.
6. Click ‹**Apply**› to save the changes and update the unit.

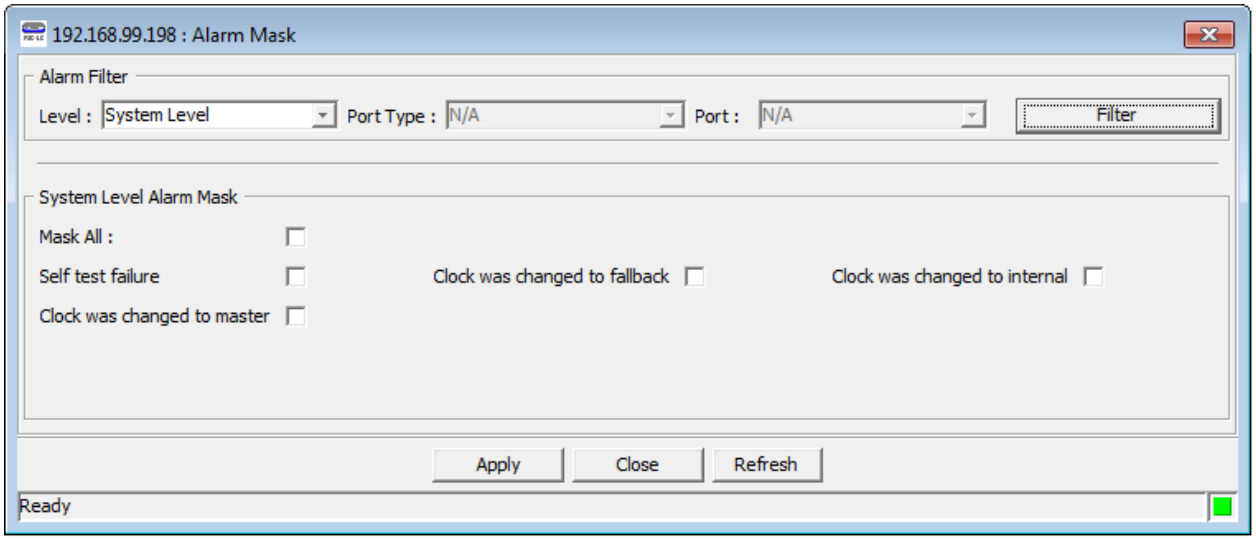


Figure 6-6. Alarm Mask Menu (System-Level Alarms are Displayed)

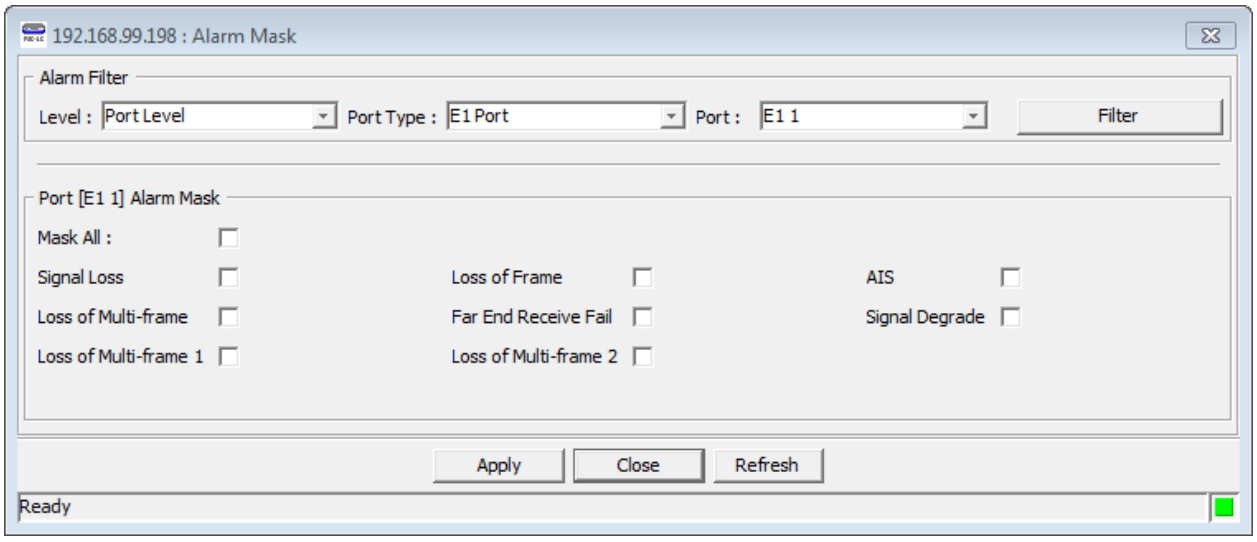


Figure 6-7. Alarm Mask Menu (Port-Level Alarms are Displayed)

6.2 Running Diagnostic Tests

RV-EMS supports diagnostic functions that test RIC-LC for proper operation, and isolate the location of faults. This includes the following tests:

- Internal and external loopbacks
- Internal and external BERT
- Virtual Cable Test

Running Loopbacks

The unit supports activation of the E1 interface diagnostic loopbacks by externally testing the connection between the E1 port and user E1 equipment.

➤ **To run a loopback:**

1. From the shelf view window, click on an E1 port to select it.
2. From the Remote Loop menu (Diagnostics › **Remote Loop**), select **Enable** to run the test or choose **Disable** to deactivate an active loopback (see *Table 6-2*).
3. Click **‹Set›**.

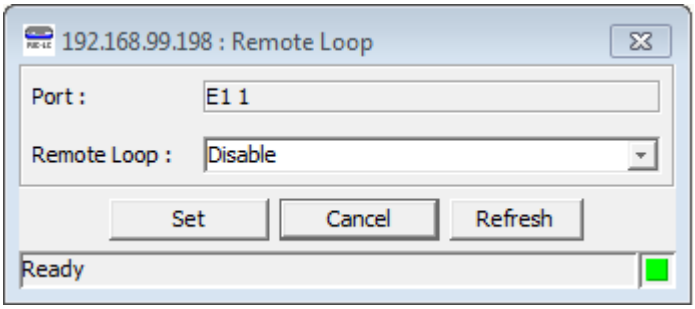


Figure 6-8. Diagnostic Loopback (E1 Interface)

Table 6-4. Interface Loopback Parameters

Parameter	Description	Values
Port	Number of the port to be tested	**E1 1–16**
Remote Loop	Enables or disables a remote loopback procedure	**Disable** – Loopback is disabled **Enable** – Loopback is enabled

Running E1 BERT

RIC-LC includes a built-in internal and external BERT utility to monitor the TDM link quality. The BERT test can be run on separate timeslots. BERT test pattern is also user-selectable.

➤ **To run E1 BERT:**

1. From the shelf view window, click on an E1 port to select it.
2. From the BERT menu (Diagnostics › **BERT**), configure, activate or deactivate a BERT test (see *Table 6-3*).
3. The BERT result displays in the current frame.
   - To control the polling interval for the statistics data, click **Polling Interval**.
   - To activate the test, click **Start Test**.
   - To deactivate the test, click **Stop Test**.
   - To clear the Bit Error Count, click **Clear Error Bits**.
   - To inject a single error into the transmitted test pattern, click **Inject Single Error**.

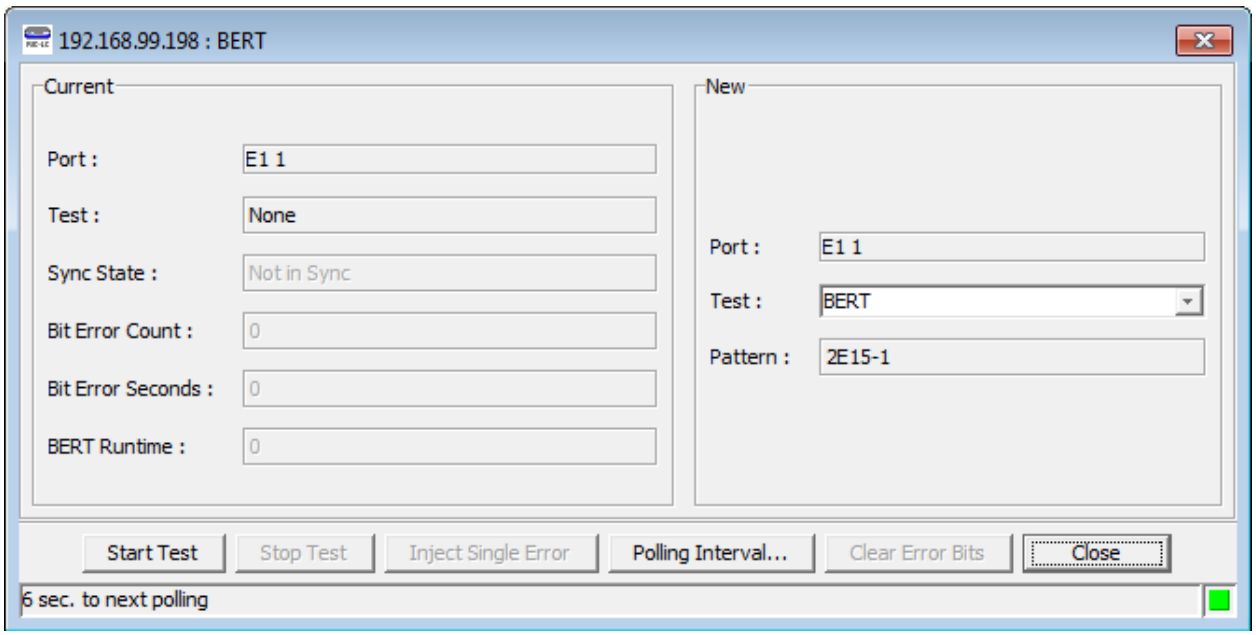


Figure 6-9. BERT

Table 6-5. BERT Test Parameters

Parameter	Description	Values
Port	Number of the port to be tested	**E1 1-16**
Test	Test status of the BERT	**None** – BERT is disabled **BERT**
Sync State	Sync status of the BERT	**Not in Sync** **In Sync**
Bit Error Count	Total number of error bits	
Bit Error Seconds	Total number of seconds in which errors have been detected	
BERT Runtime	Total time the test is running	
Pattern	A pseudo-random BERT pattern to be used during the test	**2E15-1**

Running Virtual Cable Test

This diagnostic can be used to check the quality of the Tx/Rx cables, connectors and terminations.

➤ **To run a virtual cable test:**

1. From the shelf view window, click on an ETH port to select it.
2. Select Diagnostics › **Virtual Cable Test**.

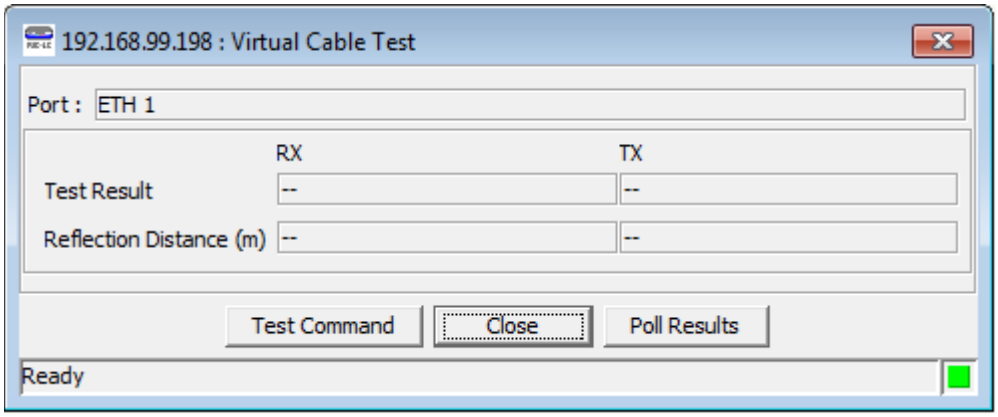


Figure 6-10. Virtual Cable Test

3. To run the test click **Test Command**.

   The test causes a temporary port shutdown.
4. To view the results of the virtual cable test, click **Poll Results**.

Chapter 7

Application Tutorial

This chapter provides detailed instructions for setting up a typical application using RIC-LC.

7.1 Overview

Application

Figure 7-1 illustrates an application in which one RIC-LC unit provides Ethernet cellular backhauling, working opposite a third-party Ethernet device.

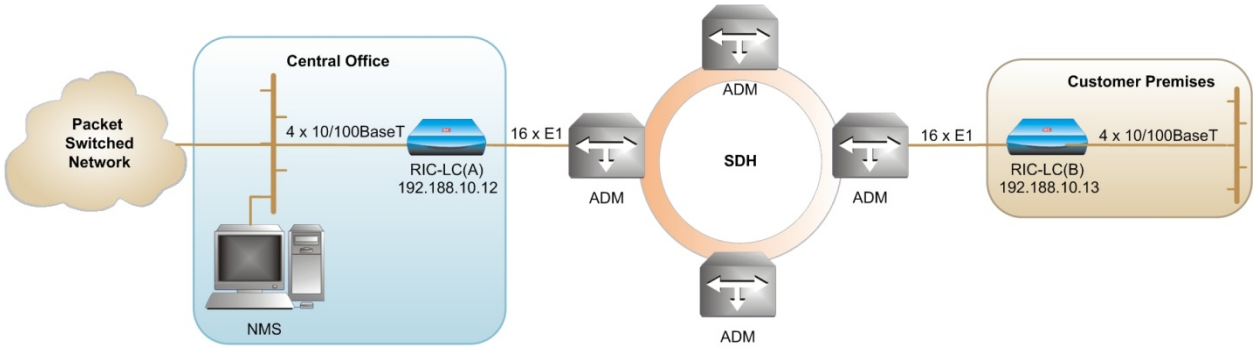


Figure 7-1. Ethernet Cellular Backhauling over PDH/SDH

This application has the following requirements:

- E1 links to the SDH network
- Third-party Ethernet device that can work opposite the RIC-LC interfaces.

Connecting RIC-LC Units to Network Management Stations

RIC-LC can be managed by a network management station (NMS) via the RIC-LC Ethernet ports. The connection can be made from either a local LAN or a remote location, via a PSN.

➤ **To connect RIC-LC to the network management station:**

- Connect an Ethernet port to a port of an Ethernet switch or hub serving the network on which the NMS is connected.

Configuration Sequence

The configuration procedure consists of the following stages:

1. Configuring host IP parameters
2. Configuring physical port parameters
3. Configuring the logical layer

Table 7-1. Host IP Parameters

Device	Host IP	IP mask	Default Gateway
RIC-LC (A)	192.188.10.12	255.255.255.0	192.188.10.1
RIC-LC (B)	192.188.10.13	255.255.255.0	192.188.10.1

7.2 Launching the RIC-LC Shelf View Window

Launch the RIC-LC shelf view to gain access to the unit.

➤ **To launch the RIC-LC shelf view:**

- On the map, select and double-click the RIC-LC icon.

  The RIC-LC shelf view window opens. You can now configure and monitor the unit.

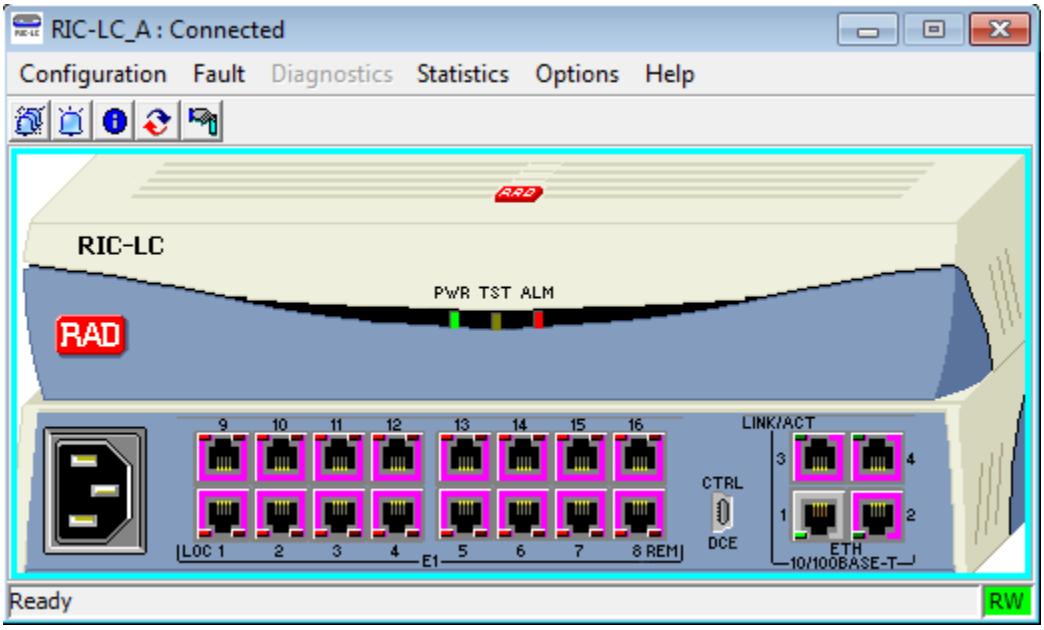


Figure 7-2. RIC-LC (A) Shelf view

7.3 Configuring the RIC-LC (A) Unit

This section explains how to configure the central RIC-LC (A) unit.

To configure RIC-LC (A), first configure the IP parameters and the manager's list; refer to *Chapter 2, Configuring Host Parameters* and *Configuring Management Access*.

Configuring E1 Interface at the Physical Level

➤ **To configure the E1 physical layer:**

1. From the shelf view window, click on an E1 port to select it.
2. Display the Port Parameters menu (Configuration › **Port Parameters**).
3. Set the admin status to **Up**.
4. Click ‹**Set**› to save the changes and update RIC-LC (A).

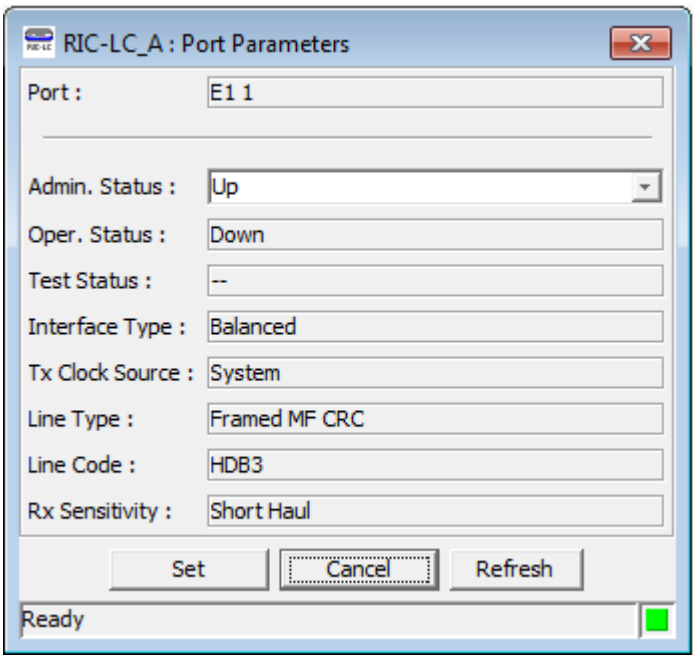


Figure 7-3. Configuring E1 Interface for RIC-LC (A)

Configuring the System Clock

The configuration procedure for system clock parameters is similar for the two RIC-LC units.

➤ **To configure the system clock source for RIC-LC (A):**

1. From the shelf view window, click on the RIC-LC (A) unit to select it.
2. Display the System Clocks menu (Configuration › **System Clocks**).
3. Set the master clock source to **Internal**.
4. Click ‹**Set**› to save the changes and update RIC-LC (A).

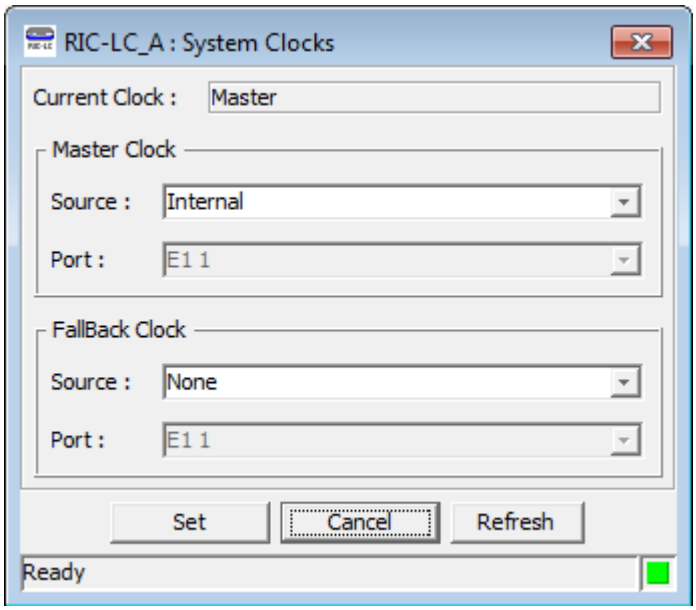


Figure 7-4. Defining System Clock for RIC-LC

Configuring the Logical Layer

For the unit, you can use the default logical layer configuration (logical port VCG 1 bound to E1 ports 1–16).

➤ **To configure the logical layer:**

1. From the shelf view window, click on the RIC-LC (A) unit to select it.
2. Display the Logical Ports menu (Configuration › **Logical port**).
3. To change the default configuration, select the desired logical port and click **Change**.

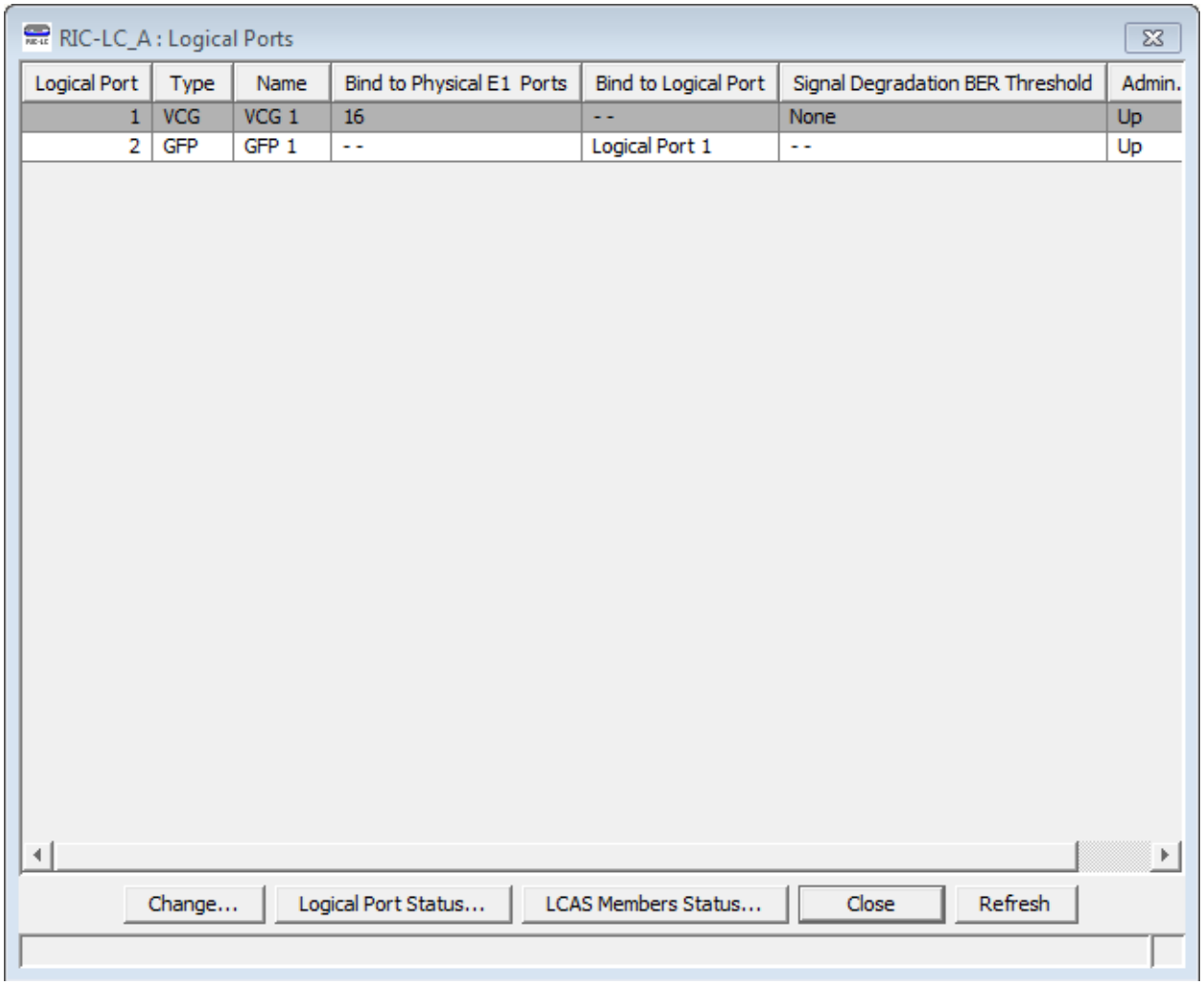


Figure 7-5. Logical ports Parameters

4. Make the desired changes and click **Set** to save them.

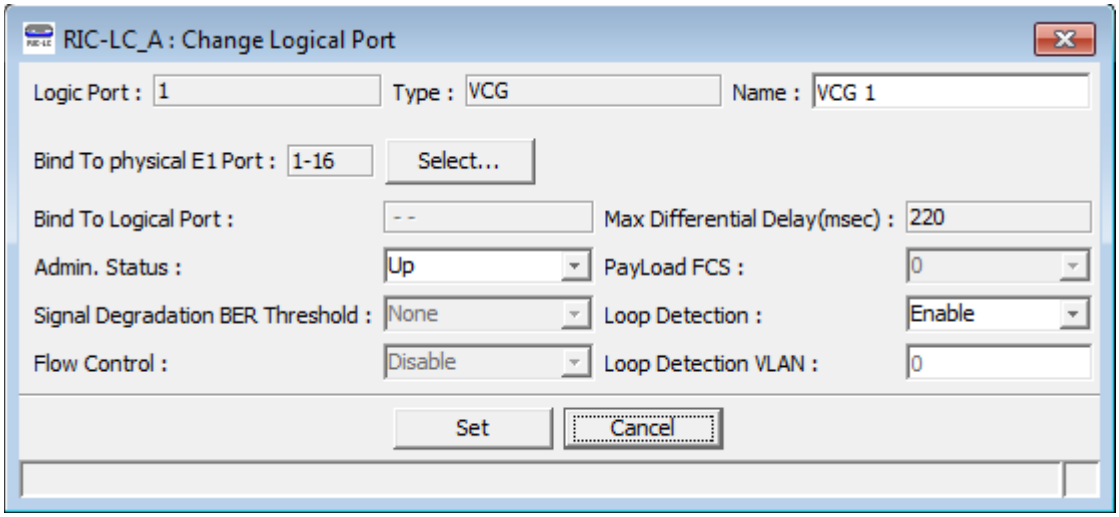

RIC-LC_A : Change Logical Port
Logic Port : 1
Type : VCG
Name : VCG 1
Bind To physical E1 Port : 1-16
Select...
Bind To Logical Port : --
Max Differential Delay(msec) : 220
Admin. Status : Up
PayLoad FCS : 0
Signal Degradation BER Threshold : None
Loop Detection : Enable
Flow Control : Disable
Loop Detection VLAN : 0
Set
Cancel

Figure 7-6. Configuring the Logical Ports

7.4 Configuring RIC-LC (B)

The configuration procedure of the B unit is similar, except for defining different management and service host IP addresses.

To configure RIC-LC (B) on the device, first configure the IP parameters and the manager's list; refer to *Chapter 2, Configuring Host Parameters* and *Configuring Management Access*.

Configuring the Physical Layer

➤ **To configure the E1 physical layer:**

1. From the shelf view window, click on an E1 port to select it.
2. Display the Port Parameters menu (Configuration › **Port Parameters**).
3. Set the Admin Status to **Up**.
4. Click ‹**Set**› to save the changes and update RIC-LC (B).

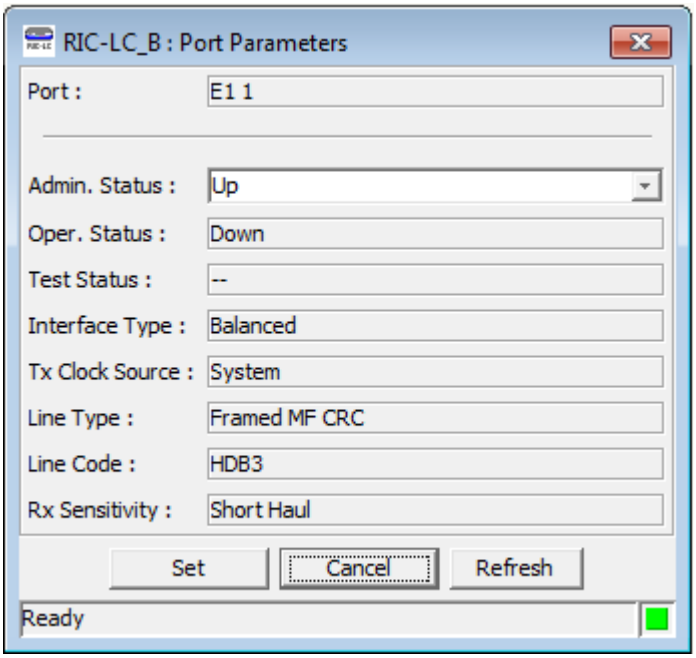


Figure 7-7. Configuring E1 Interface for RIC-LC (A)

Configuring the System Clock

The B unit is configured to use the system internal clock as the transmit clock source for their E1 links.

➤ **To configure the system clock:**

1. From the shelf view window, click on the RIC-LC (B) unit to select it.
2. Display the System Clocks menu (Configuration › **System Clocks**).
3. Set the master clock source to **Rx**.
4. Specify the port to be used.

5. Select **Set**.

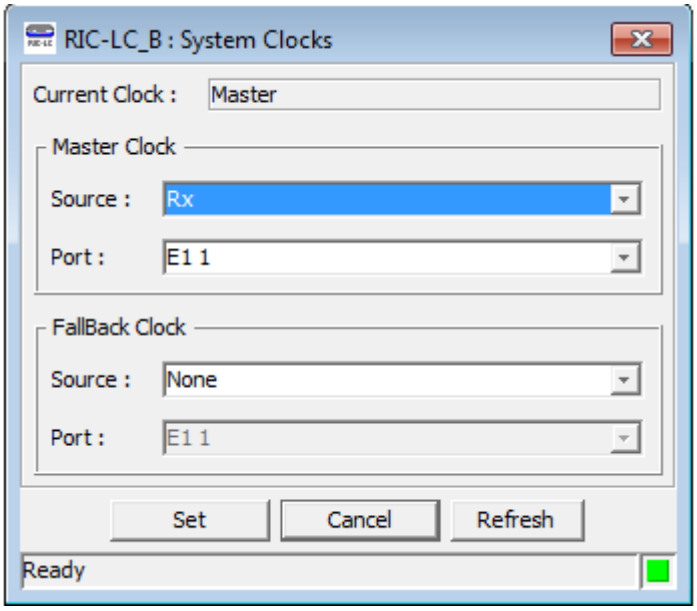


Figure 7-8. Defining System Clock for RIC-LC (B)

Configuring the Logical Layer

For the unit, you can use the default logical layer configuration (logical port VCG 1 bound to E1 ports 1–16).

➤ **To configure the logical layer:**

1. From the shelf view window, click on the RIC-LC (A) unit to select it.
2. Display the Logical Ports menu (Configuration › **Logical port**).
3. To change the default configuration, select the logical port, and click **Change**.

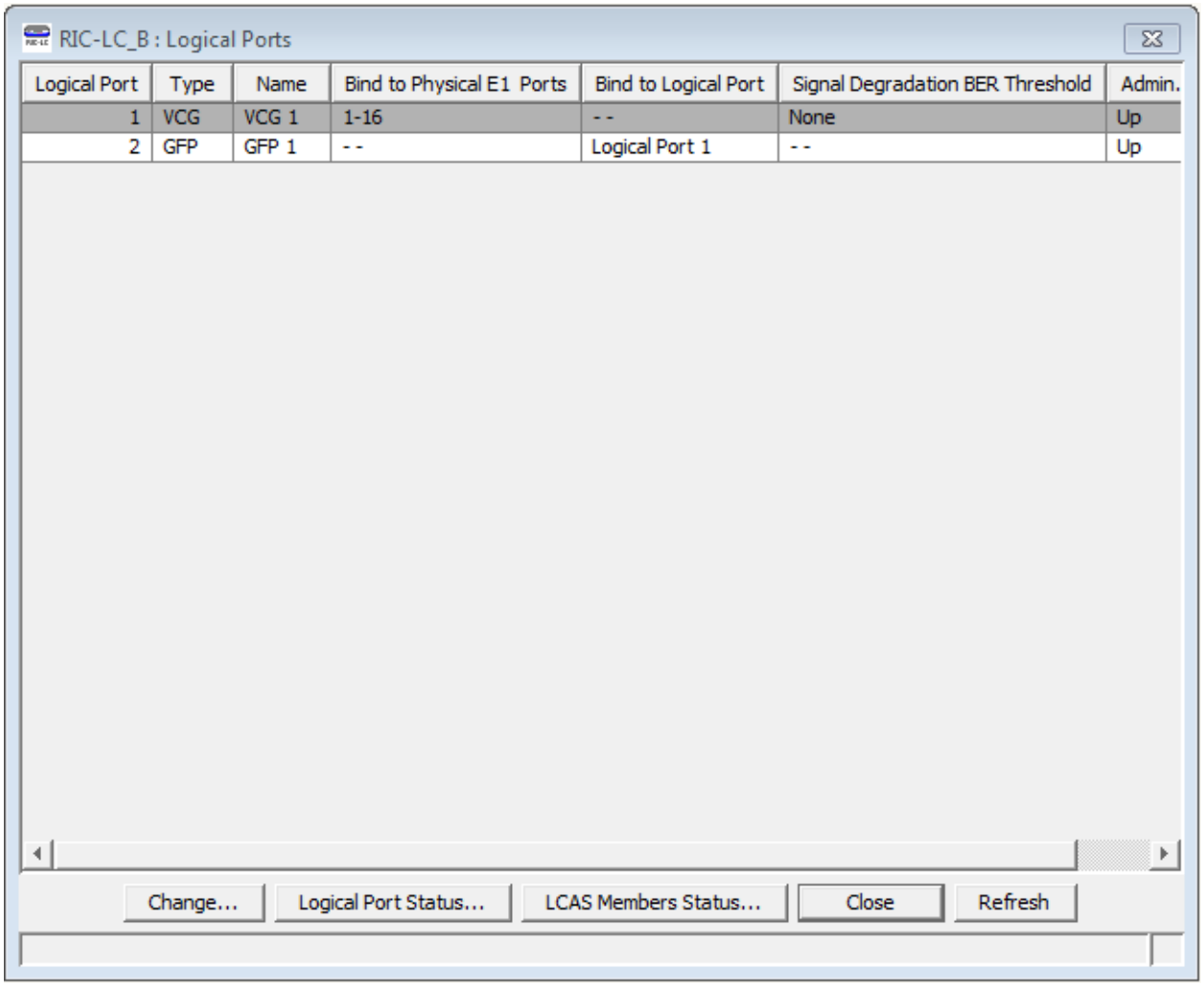


Figure 7-9. Logical ports Parameters

4. Modify the settings as needed, and click **Set** to save them.

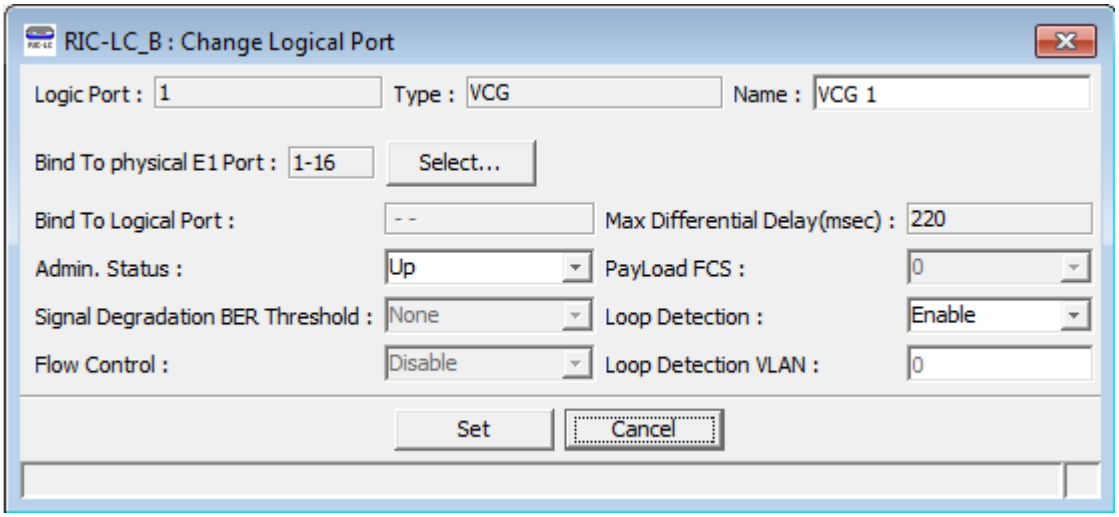

RIC-LC_B : Change Logical Port
Logic Port : 1
Type : VCG
Name : VCG 1
Bind To physical E1 Port : 1-16
Select...
Bind To Logical Port : - -
Max Differential Delay(msec) : 220
Admin. Status : Up
PayLoad FCS : 0
Signal Degradation BER Threshold : None
Loop Detection : Enable
Flow Control : Disable
Loop Detection VLAN : 0
Set
Cancel

Figure 7-10. Configuring the Logical Ports